MATHS

BOOKS - NIKITA MATHS (HINGLISH)

INTEGRATION

MULTIPLE CHOICE QUESTIONS

1. $\int \left(3x^2 - 5\right)^2 dx =$

A. $\frac{9x^5}{5} + 10x^3 + 25x + c$

B. $\frac{9x^5}{5} - 10x^3 + 25x + c$

C. $\frac{9x^5}{5} + 10x^3 - 25x + c$

D. $\frac{9x^5}{5} - 10x^3 - 25x + c$

Answer: B

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2. $\int x^2\left(1 - \frac{2}{x}\right)^2 dx =$

A. $\frac{x^3}{3} + 2x^2 + 4x + c$

B. $\frac{x^3}{3} - 2x^2 + 4x + c$

C. $\frac{x^3}{3} + 2x^2 - 4x + c$

D. $\frac{x^3}{3} - 2x^2 - 4x + c$

Answer: B

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3. $\int \frac{ax^{-2} + bx^{-1} + c}{x^{-3}} dx =$

A. $2ax^2 + 3bx^3 + 4cx^4 + c_1$

B. $6ax^2 + 4bx^3 + 3cx^4 + c_1$

C. $a + b + cx^{-2} + c_1$

D. $\frac{ax^2}{2} + \frac{bx^3}{3} + \frac{cx^4}{4} + c_1$

Answer: D

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4. $\int \frac{ax^3 + bx^2 + c}{x^4} dx =$

A. $a\log|x| + \frac{b}{x} + \frac{c}{3x^3} + c_1$

B. $a\log|x| + \frac{b}{x} - \frac{c}{3x^3} + c_1$

C. $a\log|x| - \frac{b}{x} - \frac{c}{3x^3} + c_1$

D. $a\log|x| + \frac{b}{x} - \frac{c}{3x^3} + c_1$

Answer: C

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5. $\int \frac{\sqrt[3]{x^2} + \sqrt[4]{x} + \sqrt[3]{x}}{\sqrt{x}} dx =$

A. $\frac{6x^{\frac{7}{6}}}{7} + \frac{4x^{\frac{4}{3}}}{3} + \frac{6x^{\frac{5}{6}}}{5} + c$

B. $\frac{7x^{\frac{7}{6}}}{6} + \frac{3x^{\frac{3}{4}}}{4} + \frac{5x^{\frac{5}{6}}}{6} + c$

C. $\frac{x^{\frac{7}{6}}}{7} + \frac{x^{\frac{3}{4}}}{3} + \frac{x^{\frac{5}{6}}}{5} + c$

D. $\frac{x^{\frac{7}{6}}}{6} + \frac{x^{\frac{3}{4}}}{4} + \frac{x^{\frac{5}{6}}}{6} + c$

Answer: A

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6. If α and β are the roots of the equation $ax^2 + bx + c = 0$ then $\int \frac{(x - \alpha)(x - \beta)}{ax^2 + bx + c} dx =$

A. $ax^2 + c_1$

B. $ax + c_1$

C. $\frac{x^2}{2a} + c_1$

D. $\frac{x}{a} + c_1$

Answer: D

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7. $\int \left(\frac{1}{(6x - 5)^4} - \frac{1}{(8 - 3x)^9} \right) dx =$

A. $\frac{1}{18(6x - 5)^3} + \frac{1}{24(8 - 3x)^8} + c$

B. $\frac{1}{18(6x - 5)^3} - \frac{1}{24(8 - 3x)^8} + c$

C. $\frac{-1}{18(6x - 5)^3} - \frac{1}{24(8 - 3x)^8} + c$

D. $\frac{-1}{18(6x - 5)^3} + \frac{1}{24(8 - 3x)^8} + c$

Answer: C

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8. $\int \frac{dx}{\sqrt{3x+5}-\sqrt{3x+2}} =$

A. $\frac{1}{27}\left(\sqrt{(3x+5)^3}-\sqrt{(3x+2)^3}\right)+c$

B. $\frac{1}{27}\left(\sqrt{(3x+5)^3}+\sqrt{(3x+2)^3}\right)+c$

C. $\frac{2}{27}\left(\sqrt{(3x+5)^3}-\sqrt{(3x+2)^3}\right)+c$

D. $\frac{2}{27}\left(\sqrt{(3x+5)^3}+\sqrt{(3x+2)^3}\right)+c$

Answer: D

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9. $\int \frac{3}{\sqrt{7x-2}-\sqrt{7x-5}}dx =$

A. $\frac{2}{21}\left(\sqrt{(7x-2)^3}+\sqrt{(7x-5)^3}\right)+c$

B. $\frac{2}{21}\left(\sqrt{(7x-2)^3}-\sqrt{(7x-5)^3}\right)+c$

C. $\frac{1}{21}\left(\sqrt{(7x-2)^3}+\sqrt{(7x-5)^3}\right)+c$

D. $\frac{2}{21}\left(\sqrt{(7x-2)^3}-\sqrt{(7x-5)^3}\right)+c$

Answer: A

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10. $\int \frac{2x}{(2x+1)^2} dx$

A. $\frac{1}{2}\log|2x+1| + \frac{1}{2(2x+1)} + c$

B. $\frac{1}{2}\log|2x+1| - \frac{1}{2(2x+1)} + c$

C. $2\log|2x+1| + \frac{1}{2(2x+1)} + c$

D. $2\log|2x+1| - \frac{1}{2(2x+1)} + c$

Answer: A

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11. Evaluate: $\int \frac{x^7}{x+1} dx$

A. $\frac{x^7}{7} + \frac{x^6}{6} + \frac{x^5}{5} + \frac{x^4}{4} + \frac{x^3}{3} + \frac{x^2}{2} + x + \log|x+1| + c$

B. $\frac{x^7}{7} + \frac{x^6}{6} + \frac{x^5}{5} + \frac{x^4}{4} + \frac{x^3}{3} + \frac{x^2}{2} + x - \log|x+1| + c$

C. $\frac{x^7}{7} - \frac{x^6}{6} + \frac{x^5}{5} + \frac{x^4}{4} - \frac{x^3}{3} + \frac{x^2}{2} - x + \log|x+1| + c$

D. $\frac{x^7}{7} - \frac{x^6}{6} + \frac{x^5}{5} - \frac{x^4}{4} + \frac{x^3}{3} + \frac{x^2}{2} + x - \log|x+1| + c$

Answer: D

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12. $\int \frac{x+1\sqrt{1-x^2}}{x\sqrt{1-x^2}} dx =$

A. $\sin^{-1}x - \frac{1}{2}\log|x| + c$

B. $\sin^{-1}x + \frac{1}{2}\log|x| + c$

C. $\sin^{-1}x - \log|x| + c$

D. $\sin^{-1}x + \log|x| + c$

Answer: D

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13. $\int \frac{(x+1)^2}{x\left(x^2+1\right)} dx$ is equal to:

A. $\log|x| + c$

B. $\log|x| + 2\tan^{-1}x + c$

C. $-\log\left|x^2+1\right| + c$

D. $\log\left|x\left(x^2+1\right)\right| + c$

Answer: B

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14. $\int\left(\sin^{-1}x + \cos^{-1}x\right)dx =$

A. $\frac{\pi x}{2} + c$

B. $\frac{\pi x}{2} + x + c$

C. $x\left(\sin^{-1}x - \cos^{-1}x\right) + c$

D. $x\left(\sin^{-1}x + \cos^{-1}x\right) + c$

Answer: A

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15. $\int\left(\sin^4 x - \cos^4 x\right)dx =$

A. $\frac{-\cos 2x}{2} + c$

B. $\frac{\cos 2x}{2} + c$

C. $\frac{-\sin 2x}{2} + c$

D. $\frac{\sin 2x}{2} + c$

Answer: C

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16. $\int \sin^2 x \quad dx =$

A. $\frac{x}{2} + \frac{\sin 2x}{4} + c$

B. $\frac{x}{2} - \frac{\sin 2x}{4} + c$

C. $x + \frac{\sin 2x}{2} + c$

D. $x - \frac{\sin 2x}{2} + c$

Answer: B

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17. $\int \cos^2 x \quad dx =$

A. $x + \frac{\sin 2x}{2} + c$

B. $x - \frac{\sin 2x}{2} + c$

C. $\frac{x}{2} + \frac{\sin 2x}{4} + c$

D. $\frac{x}{2} - \frac{\sin 2x}{4} + c$

Answer: C

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18. $\int \tan^2 x \quad dx =$

A. $\tan x + x + c$

B. $-\tan x - x + c$

C. $-\tan x + x + c$

D. $\tan x - x + c$

Answer: D

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19. $\int \cot^2 x \quad dx =$

A. $-\cot x - x + c$

B. $-\cot x + x + c$

C. $\cot x - x + c$

D. $\cot x + x + c$

Answer: A

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20. $\int \sin^3 x \quad dx =$

A. $\frac{-3\cos x}{4} + \frac{\cos 3x}{12} + c$

B. $\frac{3\cos x}{4} - \frac{\cos 3x}{12} + c$

C. $\frac{-3\cos x}{4} - \frac{\cos 3x}{12} + c$

D. $\frac{3\cos x}{4} + \frac{\cos 3x}{12} + c$

Answer: A

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21. $\int \cos^3 x \quad dx =$

A. $\frac{-3\sin x}{4} + \frac{\sin 3x}{12} + c$

B. $\frac{3\sin x}{4} - \frac{\sin 3x}{12} + c$

C. $\frac{-4\sin x}{3} + \frac{\sin 3x}{12} + c$

D. $\frac{4\sin x}{3} - \frac{\sin 3x}{12} + c$

Answer: A

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22. $\int \sin^4 x \quad dx =$

A. $\frac{1}{32}(12x + 8\sin 2x + \sin 4x) + c$

B. $\frac{1}{32}(12x + 8\sin 2x - \sin 4x) + c$

C. $\frac{1}{32}(12x - 8\sin 2x + \sin 4x) + c$

D. $\frac{1}{32}(12x - 8\sin 2x - \sin 4x) + c$

Answer: C

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23. $\int \sin 7x \cos 3x dx =$

A. $\frac{-\cos 10x}{10} - \frac{\cos 4x}{4} + c$

B. $\frac{-\cos 10x}{10} + \frac{\cos 4x}{4} + c$

C. $\frac{-\cos 10x}{20} - \frac{\cos 4x}{8} + c$

D. $\frac{-\cos 10x}{20} + \frac{\cos 4x}{8} + c$

Answer: C

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24. $\int 5\cos 8x \cos 2x dx =$

A. $\frac{\sin 10x}{2} - \frac{5\sin 6x}{6} + c$

B. $\frac{\sin 10x}{2} + \frac{5\sin 6x}{6} + c$

C. $\frac{\sin 10x}{4} - \frac{5\sin 6x}{12} + c$

D. $\frac{\sin 10x}{4} + \frac{5\sin 6x}{12} + c$

Answer: D

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25. $\int 2\sin 3x \sin 6x dx =$

A. $\frac{\sin 3x}{6} + \frac{\sin 9x}{18} + c$

B. $\frac{\sin 3x}{6} - \frac{\sin 9x}{18} + c$

C. $\frac{\sin 3x}{3} + \frac{\sin 9x}{9} + c$

D. $\frac{\sin 3x}{3} - \frac{\sin 9x}{9} + c$

Answer: D

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26. $\int \cos x \cos 2x \cos 3x dx =$

A. $\frac{1}{2}\left(x+\frac{\sin 2x}{2}+\frac{\sin 4x}{4}+\frac{\sin 6x}{6}\right)+c$

B. $\frac{1}{4}\left(x+\frac{\sin 2x}{2}+\frac{\sin 4x}{4}+\frac{\sin 6x}{6}\right)+c$

C. $\frac{1}{8}\left(x+\frac{\sin 2x}{2}+\frac{\sin 4x}{4}+\frac{\sin 6x}{6}\right)+c$

D. $\frac{1}{16}\left(x+\frac{\sin 2x}{2}+\frac{\sin 4x}{4}+\frac{\sin 6x}{6}\right)+c$

Answer: B

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27. $\int \sin 4x \cos x \cos 6x dx =$

A. $\frac{1}{4}\left(\cos x+\frac{\cos 3x}{3}+\frac{\cos 9x}{9}+\frac{\cos 11x}{11}\right)+c$

B. $\frac{1}{4}\left(\cos x-\frac{\cos 3x}{3}-\frac{\cos 9x}{9}+\frac{\cos 11x}{11}\right)+c$

C. $\frac{1}{4}\left(\cos x-\frac{\cos 3x}{3}+\frac{\cos 9x}{9}-\frac{\cos 11x}{11}\right)+c$

D. $\frac{1}{4}\left(\cos x+\frac{\cos 3x}{3}-\frac{\cos 9x}{9}-\frac{\cos 11x}{11}\right)+c$

Answer: D

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28. $\int(\tan x - \cot x)^2 dx =$

A. $\tan x - \cot x + 4x + c$

B. $\tan x - \cot x - 4x + c$

C. $\tan x - \cot x + c$

D. $\tan x + \cot x + c$

Answer: B

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29. $\int(\sec x + \tan x)^2 dx =$

A. $2(\sec x + \tan x) - x + c$

B. $2(\sec x + \tan x) + x + c$

C. $2(\sec x + \tan x) + c$

D. $\sec x(\sec x + \tan x) + c$

Answer: A

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30. $\int \left[\left(\sin^2 . \frac{x}{2} - \cos^2 . \frac{x}{2} \right)^2 + 4\sin^2 . \frac{x}{2} . \cos^2 . \frac{x}{2} \right] dx =$

A. $\sin x + c$

B. $-\sin x + c$

C. $\cos x + c$

D. $-\cos x + c$

Answer: A

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31. $\int \sqrt{1 + \sin x} dx$

A. $\sin\left(\frac{x}{2}\right) + \cos\left(\frac{x}{2}\right) + c$

B. $\sin\left(\frac{x}{2}\right) - \cos\left(\frac{x}{2}\right) + c$

C. $2\sin\left(\frac{x}{2}\right) + 2\cos\left(\frac{x}{2}\right) + c$

D. $2\sin\left(\frac{x}{2}\right) - \cos\left(\frac{x}{2}\right) + c$

Answer: D

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32. $\int \sqrt{1 + \sin 2x} dx =$

A. $\sin x + \cos x + c$

B. $\sin x - \cos x + c$

C. $\cos x - \sin x + c$

D. $-\cos x - \sin x + c$

Answer: B

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33. Evaluate $\int (1 - \cos x)\operatorname{cosec}^2 x\,dx$

A. $-\tan\left(\frac{x}{2}\right) + c$

B. $\tan\left(\frac{x}{2}\right) + c$

C. $-2\tan\left(\frac{x}{2}\right) + c$

D. $2\tan\left(\frac{x}{2}\right) + c$

Answer: B

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34. $\int \frac{1}{\sin^2 x \cos^2 x} dx = ?$

A. $\tan x + \cot x + c$

B. $-\tan x - \cot x + c$

C. $\cot x - \tan x + c$

D. $\tan x - \cot x + c$

Answer: D

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35. $\int \frac{1}{\sin^2 x \cos^2 x} dx = ?$

A. $2\tan 2x + c$

B. $-2\tan 2x + c$

C. $-2\cot 2x + c$

D. $2\cot 2x + c$

Answer: C

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36. $\int \sec^2 x \operatorname{cosec}^2 x dx =$

A. $\tan x - \cot 2x + c$

B. $\tan x - \cot x + c$

C. $\tan x + \cot 2x + c$

D. $2\tan x \cot 2x + c$

Answer: B

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37. $\int \frac{\cos 2x + 2\sin^2 x}{\cos^2 x} =$

A. $2\sec x + c$

B. $2\tan x + c$

C. $\sec x + c$

D. $\tan x + c$

Answer: D

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38. $\int \frac{\cos\theta - \cos 2\theta}{1 - \cos\theta} d\theta =$

A. $\theta + 2\sin\theta + c$

B. $\theta - 2\sin\theta + c$

C. $2\theta + 2\sin\theta + c$

D. $2\theta - 2\sin\theta + c$

Answer: A

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39. $\int \frac{\cos 7x - \cos 8x}{1 + 2\cos 5x} dx =$

A. $\frac{-\sin 2x}{2} - \frac{\sin 3x}{3} + c$

B. $\frac{\sin 2x}{2} + \frac{\sin 3x}{3} + c$

C. $\frac{\sin 2x}{2} - \frac{\sin 3x}{3} + c$

D. $\frac{\sin 2x}{3} - \frac{\sin 3x}{2} + c$

Answer: C

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40. $\int \frac{\cos 2x}{\sin^2 x \cos^2 x} dx =$

A. $\cot x + \tan x + c$

B. $\cot x - \tan x + c$

C. $\tan x - \cot x + c$

D. $-\tan x - \cot x + c$

Answer: D

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41. $\int \frac{\cos 4x}{\sin^2 x} dx =$

A. $-\cot x - 4x - 2\sin 2x + c$

B. $\cot x - 4x - 2\sin 2x + c$

C. $4x + \cot x - 2\sin 2x + c$

D. $4x + \cot x + 2\sin 2x + c$

Answer: A

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42. $\int \frac{\sin^4 2x + \cos^4 2x}{\sin^2 2x \cos^2 2x} dx =$

A. $\frac{\tan 2x}{2} + \frac{\cot 2x}{2} + 2x + c$

B. $\frac{\tan 2x}{2} - \frac{\cot 2x}{2} + 2x + c$

C. $\frac{\tan 2x}{2} + \frac{\cot 2x}{2} - 2x + c$

D. $\frac{\tan 2x}{2} - \frac{\cot 2x}{2} - 2x + c$

Answer: D

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43. $\int \frac{\sin^6\theta + \cos^6\theta}{\sin^2\theta\cos^2\theta} d\theta =$

A. $\tan\theta + \cot\theta + 3\theta + c$

B. $\tan\theta - \cot\theta - 3\theta + c$

C. $\tan\theta + \cot\theta - 3\theta + c$

D. $\tan\theta - \cot\theta + 3\theta + c$

Answer: B

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44. $\int \frac{\text{cosec}\theta - \cot\theta}{\text{cosec}\theta + \cot\theta} d\theta =$

A. $2\frac{\tan\theta}{2} - x + c$

B. $2\cot\theta - \theta + c$

C. $2\tan\theta - \theta + c$

D. $2\cot\theta + \theta + c$

Answer: A

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45. $\int \frac{\cos 2x - \cos 2\alpha}{\cos x - \cos\alpha} dx$

A. $2(x\cos\alpha + \sin x) + c$

B. $2(\cos\alpha + \sin x) + c$

C. $2(x\cos\alpha - \sin x) + c$

D. $-2(\cos\alpha + \sin x) + c$

Answer: A

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46. $\int \frac{\sin x + \operatorname{cosec} x}{\tan x} dx =$

A. $\sin x - \operatorname{cosec} x + c$

B. $-\sin x + \operatorname{cosec} x + c$

C. $\log|\tan x| + c$

D. $\log|\cot x| + c$

Answer: A

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47. $\int \frac{\sec\theta}{\sec\theta + \tan\theta} d\theta =$

A. $\tan\theta + \sec\theta + c$

B. $-(\tan\theta + \sec\theta) + c$

C. $\tan\theta - \sec\theta + c$

D. $\sec\theta - \tan\theta + c$

Answer: C

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48. If $\int \frac{\cos 4x + 1}{\cot x - \tan x} dx = k\cos 4x + c$, then k= (A) $-\frac{1}{4}$ (B) $-\frac{1}{2}$ (C) $-\frac{1}{8}$ (D) none of these

A. $\frac{-\cos 4x}{8} + c$

B. $\frac{\cos 4x}{8} + c$

C. $\frac{-\cos 4x}{4} + c$

D. $\frac{\cos 4x}{4} + c$

Answer: A

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49. $\int \frac{1}{\tan x + \cot x} dx =$

A. $\frac{\cos 2x}{4} + c$

B. $\frac{\sin 2x}{4} + c$

C. $\frac{-\sin 2x}{4} + c$

D. $\frac{-\cos 2x}{4} + c$

Answer: D

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50. $\int \left(\frac{1 - \tan x}{1 + \tan x} \right)^2 dx =$

A. $-\left(\tan\left(\frac{\pi}{4} - x \right) + x \right) + c$

B. $-\left(\tan\left(\frac{\pi}{4} + x \right) + x \right) + c$

C. $\tan\left(\frac{\pi}{4} - x \right) + x + c$

D. $\tan\left(\frac{\pi}{4}+x\right)+x+c$

Answer: A

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51. $\int \frac{dx}{(1-\cos x)} = ?$

A. $\cot\left(\frac{x}{2}\right)+c$

B. $-\cot\left(\frac{x}{2}\right)+c$

C. $2\cot\left(\frac{x}{2}\right)+c$

D. $-2\cot\left(\frac{x}{2}\right)+c$

Answer: B

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52. $\int \frac{dx}{1+\cos x}$

A. $\tan\left(\frac{x}{2}\right)+c$

B. $2\tan\left(\frac{x}{2}\right)+c$

C. $-\cot\left(\frac{x}{2}\right)+c$

D. $-2\cot\left(\frac{x}{2}\right)+c$

Answer: A

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53. Evaluate: (i) $\int \frac{1}{1+\cos 2x}\,dx$ (ii) $\int \frac{1}{1-\cos 2x}\,dx$

A. $\frac{-\cot x}{2}+c$

B. $\frac{\cot x}{2}+c$

C. $\frac{-\tan x}{2}+c$

D. $\frac{\tan x}{2} + c$

Answer: D

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54. $\int \frac{1}{1 - \sin x} dx$

A. $\tan x + \sec x + c$

B. $\tan x - \sec x + c$

C. $-coesc x - \cot x + c$

D. $\cos ecx + \cot x + c$

Answer: A

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55. $\int \frac{\cos x}{1 - \cos x} dx =$

A. $2\cot\left(\frac{x}{2}\right) + x + c$

B. $2\cot\left(\frac{x}{2}\right) - x + c$

C. $\cot\left(\frac{x}{2}\right) + x + c$

D. $-\cot\left(\frac{x}{2}\right) - x + c$

Answer: D

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56. $\int \frac{\cot x}{\operatorname{cosec} x - \cot x} dx =$

A. $\operatorname{cosec} x - \cot x - x + c$

B. $\operatorname{cosec} x + \cot x - x + c$

C. $-\operatorname{cosec} x - \cot x - x + c$

D. $\operatorname{cosec} x - \cot x + x + c$

Answer: C

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57. $\int \frac{\sin x}{(1+\sin x)} dx = ?$

A. $x + \tan x + \sec x + c$

B. $x - \tan x - \sec x + c$

C. $x + \tan x - \sec x + c$

D. $x - \tan x + \sec x + c$

Answer: D

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58. $\int \frac{\tan x}{\sec x + \tan x} dx =$

A. $\sec x + \tan x + x + c$

B. $\sec x + \tan x - x + c$

C. $\sec x - \tan x + x + c$

D. $\sec x - \tan x - x + c$

Answer: C

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59. $\int \frac{\cos x}{\sqrt{1 + \sin x}} dx$ is equal to

A. $\sin\left(\frac{x}{2}\right) - \cos\left(\frac{x}{2}\right) + c$

B. $\sin\left(\frac{x}{2}\right) + \cos\left(\frac{x}{2}\right) + c$

C. $2\sin\left(\frac{x}{2}\right) - 2\cos\left(\frac{x}{2}\right) + c$

D. $2\sin\left(\frac{x}{2}\right) + 2\cos\left(\frac{x}{2}\right) + c$

Answer: D

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60. $\int \frac{\sin x + \cos x}{\sqrt{1 + \sin x}} dx$

A. $\frac{x^2}{2} + c$

B. $\frac{-x^2}{2} + c$

C. $-x + c$

D. $x + c$

Answer: D

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61. Evaluate the following integrals : $\int \tan^{-1}\left(\frac{\sin 2x}{1 + \cos 2x}\right) dx$

A. $x + c$

B. $-x + c$

C. $\frac{x^2}{2} + c$

D. $\frac{-x^2}{2} + c$

Answer: C

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62. $\int \cot^{-1}\left(\frac{1+\sin x}{\cos x}\right)dx =$

A. $\frac{\pi x}{4} - \frac{x^2}{4} + c$

B. $\frac{\pi x}{4} + \frac{x^2}{4} + c$

C. $\frac{\pi x}{4} - \frac{x^2}{2} + c$

D. $\frac{\pi x}{4} + \frac{x^2}{2} + c$

Answer: A

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63. Evaluate: `inttan^(-1){sqrt(((1-sinx)/(1+sinx)))}\ dx ,\ -pi//2

A. $\frac{\pi x}{4} + \frac{x^2}{2} + c$

B. $\frac{\pi x}{4} - \frac{x^2}{2} + c$

C. $\frac{\pi x}{4} + \frac{x^2}{4} + c$

D. $\frac{\pi x}{4} - \frac{x^2}{4} + c$

Answer: D

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64. $\int \tan^{-1}\left(\frac{2\tan x}{1 - \tan^2 x}\right) dx =$

A. $\frac{x}{2} + c$

B. $\frac{x^2}{2} + c$

C. $x^2 + c$

D. $2x^2 + c$

Answer: C

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65. $\int \tan^{-1}(\sec 3x + \tan 3x)dx =$

A. $\frac{\pi x}{2} - \frac{3x^2}{2} + c$

B. $\frac{\pi x}{2} + \frac{3x^2}{2} + c$

C. $\frac{\pi x}{4} - \frac{3x^2}{4} + c$

D. $\frac{\pi x}{4} + \frac{3x^2}{4} + c$

Answer: D

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66. $\int \cot^{-1}\sqrt{\frac{1+\cos x}{1-\cos x}}dx =$

A. $\frac{x^2}{4} + c$

B. $\frac{x^2}{2} + c$

C. $\frac{x}{4} + c$

D. $\frac{x}{2} + c$

Answer: A

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67. $\int e^{x\log a} . e^x dx$ is equal to

A. $(ae)^x + c$

B. $\frac{(ae)^x}{1 + \log a} + c$

C. $\frac{a^x}{1 + \log a} + c$

D. $\frac{e^x}{1 + \log a} + c$

Answer: B

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68. $\int \frac{e^{5\log x} - e^{4\log x}}{e^{3\log x} - e^{2\log x}} dx$

A. $e\left(3^{-3x}\right)+c$

B. $e^{3}\log|x|+c$

C. $\frac{x^{3}}{3}+c$

D. $\frac{x^{3}}{6}+c$

Answer: C

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69. Evaluate: (i) $\int \frac{2^{x}+3^{x}}{5^{x}}dx$ (ii) $\int \frac{\left(a^{x}+b^{x}\right)^{2}}{a^{x}b^{x}}dx$

A. $\frac{2^{x}}{5^{x}(\log 2-\log 5)}-\frac{3^{x}}{5^{x}(\log 3-\log 5)}+c$

B. $\frac{2^{x}}{5^{x}(\log 2-\log 5)}+\frac{3^{x}}{5^{x}(\log 3-\log 5)}+c$

C. $\frac{3^{x}}{5^{x}(\log 3-\log 5)}-\frac{2^{x}}{5^{x}(\log 2-\log 5)}+c$

D. $\frac{3^{x}}{5^{x}(\log 5-\log 3)}+\frac{2^{x}}{5^{x}(\log 5-\log 2)}+c$

Answer: B

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70. $\int \frac{\left(a^x + b^x\right)^2}{a^x b^x} dx$

A. $\frac{a^x}{b^x(\log a - \log b)} - \frac{b^x}{a^x(\log b - \log a)} + 2x + c$

B. $\frac{a^x}{b^x(\log a - \log b)} + \frac{b^x}{a^x(\log b - \log a)} - 2x + c$

C. $\frac{a^x}{b^x(\log a - \log b)} + \frac{b^x}{a^x(\log b - \log a)} + 2x + c$

D. $\frac{a^x}{b^x(\log a - \log b)} + \frac{b^x}{a^x(\log b - \log a)} - 2x + c$

Answer: C

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71. $\int \frac{e^x \cos 3x - 4^x \tan 3x}{4^x \cos 3x} dx =$

A. $\frac{e^x}{4^x(1 - \log 4)} - \frac{\sec 3x}{3} + c$

B. $\frac{e^x}{4^x(1 - \log 4)} + \frac{\operatorname{cosec} 3x}{3} + c$

C. $\frac{e^x}{1 - \log 4} - \frac{\sec 3x}{3} + c$

D. $\frac{e^x}{1 - \log 4} + \frac{\operatorname{cosec} 3x}{3} + c$

Answer: A

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72. $\int \left(e^{2-5x} + \frac{2}{6x+1} \right) dx =$

A. $\frac{e^{2-5x}}{5} + \frac{1}{3}\log|6x+1| + c$

B. $\frac{-e^{2-5x}}{5} - \frac{1}{3}\log|6x+1| + c$

C. $\frac{e^{2-5x}}{5} - \frac{1}{3}\log|6x+1| + c$

D. $\frac{-e^{2-5x}}{5} + \frac{1}{3}\log|6x+1| + c$

Answer: D

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73. If $\int f(x)dx = f(x) + c$, then $f(x) =$

A. x^e

B. e^x

C. $\log|x|$

D. $\frac{1}{x}$

Answer: B

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74. If $\int \frac{f(x)}{\log(\sin x)} dx = \log[\log \sin x] + c$, then f(x) is equal to

A. $\cot x$

B. $\tan x$

C. $\sec x$

D. $\operatorname{cosec} x$

Answer: A

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75. If $f'(x) = 4x^3 - 3x^2 + 2x + k$ and $f(0) = 1, f(1) = 4$ find $f(x)$

A. $x^4 - x^3 + x^2 + 2x + 1$

B. $x^4 - x^3 + x^2 + x + 2$

C. $x^4 - x^3 + x^2 + 2x + 2$

D. $x^4 - x^3 + x^2 + x + 1$

Answer: A

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76. If $f'(x) = 8x^3 + 3x^2 - 10x - k$ and $f(0) = -3, f(-1) = 0,$ then $f(x) =$ is

A. $2x^4 + x^3 + 5x^2 + 7x - 3$

B. $2x^4 + x^3 + 5x^2 - 7x + 3$

C. $2x^4 + x^3 - 5x^2 + 7x - 3$

D. $2x^4 + x^3 - 5x^2 - 7x - 3$

Answer: D

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77. If $f'(x) = x + \frac{1}{x}$ and $f(1) = \frac{5}{2}$, then $f(x) =$

A. $\frac{x^2}{2} + \log|x| + 2$

B. $\frac{x^2}{2} + \log|x| - 2$

C. $\frac{x^2}{2} + \log|x| + 4$

D. $\frac{x^2}{2} + \log|x| - 4$

Answer: A

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78. If f(x) = x , g (x) = sinx , then $\int f(g(x))\,dx$ is equal to

A. $-\cos x + c$

B. $\cos x + c$

C. $\frac{-x^2}{2} + c$

D. $\frac{x^2}{2} + c$

Answer: A

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79. If f'(x)=k(cos x-sinx), f'(0)=3, $f\left(\frac{\pi}{2}\right) = 15$, find f(x)

A. $\cos x + \sin x + 12$

B. $3(\cos x + \sin x) + 12$

C. $\cos x + \sin x - 12$

D. $3(\cos x + \sin x) - 12$

Answer: B

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80. If $\int(\sin 2x - \cos 2x)dx = \frac{1}{\sqrt{2}}\sin(2x - a) + b$ then

A. $a = \frac{\pi}{4}, b = 0$

B. $a = \frac{-\pi}{4}, b = 0$

C. $a = \frac{5\pi}{4}, b = 0$ constant

D. $a = \frac{-5\pi}{4}, b = 0$ constant

Answer: D

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81. $\int(3x + 4)^3 dx =$

A. $\frac{(3x + 4)^4}{12} + c$

B. $\frac{3(3x+4)^4}{4}+c$

C. $\frac{3(3x+4)^2}{2}+c$

D. $\frac{3(3x+4)^2}{4}+c$

Answer: A

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82. $\int\left(\left(9-\frac{x}{2}\right)^8+(4x+5)^3\right)dx=$

A. $\frac{2}{3}\left(9-\frac{x}{2}\right)^9+\frac{(4x+5)^4}{16}+c$

B. $\frac{-2}{3}\left(9-\frac{x}{2}\right)^9+\frac{(4x+5)^4}{16}+c$

C. $\frac{2}{9}\left(9-\frac{x}{2}\right)^9+\frac{(4x+5)^4}{16}+c$

D. $\frac{-2}{9}\left(9-\frac{x}{2}\right)^9+\frac{(4x+5)^4}{16}+c$

Answer: D

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83. $\int \left(x - \frac{1}{x}\right)^{\frac{3}{2}} \left(\frac{\left(x^2+1\right)}{x^2}\right) dx =$

A. $\frac{-2}{5}\left(x - \frac{1}{x}\right)^{\frac{5}{2}} + c$

B. $\frac{2}{5}\left(x - \frac{1}{x}\right)^{\frac{5}{2}} + c$

C. $-2\left(x - \frac{1}{x}\right)^{\frac{1}{2}} + c$

D. $2\left(x - \frac{1}{x}\right)^{\frac{1}{2}} + c$

Answer: B

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84. $\int x^5 \sqrt{a^3 + x^3} dx =$

A. $\frac{1}{15}\left(a^3 + x^3\right)^{\frac{5}{2}} + \frac{1}{9}\left(a^3 + x^3\right)^{\frac{3}{2}} + c$

B. $\frac{1}{15}\left(a^3 + x^3\right)^{\frac{5}{2}} - \frac{1}{9}\left(a^3 + x^3\right)^{\frac{3}{2}} + c$

C. $\frac{2}{15}\left(a^3+x^3\right)^{\frac{5}{2}}+\frac{2a^3}{9}\left(a^3+x^3\right)^{\frac{3}{2}}+c$

D. $\frac{2}{15}\left(a^3+x^3\right)^{\frac{5}{2}}-\frac{2a^3}{9}\left(a^3+x^3\right)^{\frac{3}{2}}+c$

Answer: D

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85. Evaluate: $\int \frac{\left(x^4-x\right)^{1/4}}{x^5}\,dx$

A. $\frac{4}{15}\left(1-\frac{1}{x^3}\right)^{\frac{5}{4}}+c$

B. $\frac{4}{5}\left(1-\frac{1}{x^3}\right)^{\frac{5}{4}}+c$

C. $\frac{2}{15}\left(1-\frac{1}{x^3}\right)^{\frac{5}{4}}+c$

D. $\frac{2}{5}\left(1-\frac{1}{x^3}\right)^{\frac{5}{4}}+c$

Answer: A

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86. $\int \frac{dx}{x^2\left(x^4+1\right)}$ is

A. $-\left(x^4+1\right)^{\frac{1}{4}}+c$

B. $-\left(\frac{x^4+1}{x^4}\right)^{\frac{1}{4}}+c$

C. $\left(\frac{x^4+1}{x^4}\right)^{\frac{1}{4}}+c$

D. $\left(x^4+1\right)^{\frac{1}{4}}+c$

Answer: B

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87. $\int \frac{1}{\left((x-1)^3(x+2)^5\right)^{\frac{1}{4}}}dx$

A. $\frac{4}{3}\left(\frac{x-1}{x+2}\right)^{\frac{1}{4}}+c$

B. $\frac{4}{3}\left(\frac{x+1}{x+2}\right)^{\frac{1}{4}}+c$

C. $\frac{4}{3}\left(\frac{x-1}{x-2}\right)^{\frac{1}{4}}+c$

D. $\frac{4}{3}\left(\frac{x-1}{x+3}\right)^{\frac{1}{4}}+c$

Answer: A

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88. The integral $\int \frac{2x^{12}+5x^9}{\left(x^5+x^3+1\right)^3}dx$ is equal to (where C is a constant of integration)

A. $\frac{-x^5}{\left(x^5+x^3+1\right)^2}+c$

B. $\frac{x^{10}}{2\left(x^5+x^3+1\right)^2}+c$

C. $\frac{x^5}{2\left(x^5+x^3+1\right)^2}+c$

D. $\frac{-x^{10}}{2\left(x^5+x^3+1\right)^2}+c$

Answer: B

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89. $\frac{x^{n-1}}{\sqrt{1+4x^n}}$

A. $\frac{\sqrt{1+4x^n}}{n}+c$

B. $\frac{\sqrt{1+4x^n}}{2n}+c$

C. $\frac{2\sqrt{1+4x^n}}{n}+c$

D. $\frac{n\sqrt{1+4x^n}}{2}+c$

Answer: B

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90. $\int \frac{4x - 6}{\left(x^2 - 3x + 5\right)^{\frac{3}{2}}} dx =$

A. $\frac{2}{\sqrt{x^2 - 3x + 5}} + c$

B. $\frac{-2}{\sqrt{x^2 - 3x + 5}} + c$

C. $\frac{4}{\sqrt{x^2 - 3x + 5}} + c$

D. $\frac{-4}{\sqrt{x^2 - 3x + 5}} + c$

Answer: D

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91. $\int \frac{dx}{3x + 5x^{-n}} =$

A. $\frac{\log\left|3x^{n+1} + 5\right|}{n + 1} + c$

B. $\frac{\log\left|3x^{n+1} + 5\right|}{5(n + 1)} + c$

C. $\frac{\log\left|3x^{n+1}+5\right|}{3(n+1)}+c$

D. $\frac{\log\left|3x^{n+1}+5\right|}{15(n+1)}+c$

Answer: C

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92. $\int\frac{1}{x+x^{-n}}dx=$

A. $\frac{n\log\left|x^{n+1}+1\right|}{n+1}+c$

B. $\frac{\log\left|x^{n+1}+1\right|}{n+1}+c$

C. $\frac{n\log\left|x^{n+1}-1\right|}{n+1}+c$

D. $\frac{n\log\left|x^{n+1}-1\right|}{n+1}+c$

Answer: B

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93. $\int \frac{1}{\sqrt{x}+x} dx =$

A. $\frac{-1}{2}\log\left|1+\sqrt{x}\right| + c$

B. $\frac{1}{2}\log\left|1+\sqrt{x}\right| + c$

C. $-2\log\left|1+\sqrt{x}\right| + c$

D. $2\log\left|1+\sqrt{x}\right| + c$

Answer: D

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94. $\int \frac{dx}{4\sqrt{x}+x} =$

A. $2\log\left|4+\sqrt{x}\right| + c$

B. $2\log\left|1+\sqrt{x}\right| + c$

C. $\frac{1}{2}\log\left|4+\sqrt{x}\right|+c$

D. $\frac{1}{2}\log\left|1+\sqrt{x}\right|+c$

Answer: A

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95. Evaluate: $\int \frac{x^2+1}{x\left(x^2-1\right)}dx$

A. $\log\left|x^2-1\right|-\log|x|+c$

B. $\log|x|-\log\left|x^2-1\right|+c$

C. $-\log\left|x^2-1\right|-\log|x|+c$

D. $\log|x|+\log\left|x^2-1\right|+c$

Answer: A

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96. Evaluate: $\int \frac{x^3}{(x+1)^2}\,dx$

A. $\frac{x^2}{2} - 2x - \frac{5}{2} + 3\log|x+1| + \frac{1}{x+1} + c$

B. $\frac{x^2}{2} - 2x + \frac{5}{2} + 3\log|x+1| + \frac{1}{x+1} + c$

C. $\frac{x^2}{2} - 2x - \frac{5}{2} + 3\log|x+1| - \frac{1}{x+1} + c$

D. $\frac{x^2}{2} - 2x + \frac{5}{2} + 3\log|x+1| - \frac{1}{x+1} + c$

Answer: A

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97. If $\int \frac{x^3+4x^2-7x+5}{x+2}dx = \frac{x^3}{3} + ax^2 - 11x + b\log(x+2) + c$, then $(a, b) \equiv$

A. $\frac{x^3}{3} + x^2 + 11x + 27\log|x+2| + c$

B. $\frac{x^3}{3} + x^2 + 11x - 27\log|x+2| + c$

C. $\frac{x^3}{3} + x^2 - 11x + 27\log|x+2| + c$

D. $\frac{x^3}{3} - x^2 + 11x + 27\log|x+2| + c$

Answer: C

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98. $\int \frac{5x^2 + 4x + 7}{\sqrt{(2x+3)^3}} dx =$

A. $\frac{1}{4}\left(\frac{5}{3}\sqrt{(2x+3)^3} + 22\sqrt{2x+3} + \frac{49}{\sqrt{2x+3}}\right) + c$

B. $\frac{1}{4}\left(\frac{5}{3}\sqrt{(2x+3)^3} + 22\sqrt{2x+3} - \frac{49}{\sqrt{2x+3}}\right) + c$

C. $\frac{1}{4}\left(\frac{5}{3}\sqrt{(2x+3)^3} - 22\sqrt{2x+3} + \frac{49}{\sqrt{2x+3}}\right) + c$

D. $\frac{1}{4}\left(\frac{5}{3}\sqrt{(2x+3)^3} - 22\sqrt{2x+3} - \frac{49}{\sqrt{2x+3}}\right) + c$

Answer: D

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99. $\int (2x+1)\sqrt{x-4}\, dx =$

A. $\frac{2}{5}(x-4)^{\frac{5}{2}} - 6(x-4)^{\frac{3}{2}} + c$

B. $\frac{2}{5}(x-4)^{\frac{5}{2}} + 6(x-4)^{\frac{3}{2}} + c$

C. $\frac{4}{5}(x-4)^{\frac{5}{2}} - 6(x-4)^{\frac{3}{2}} + c$

D. $\frac{4}{5}(x-4)^{\frac{5}{2}} + 6(x-4)^{\frac{3}{2}} + c$

Answer: D

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100. $\int (4-5x)(3-x)^{\frac{-3}{2}} dx =$

A. $\frac{5x-26}{\sqrt{3-x}} + c$

B. $\frac{26-5x}{\sqrt{3-x}} + c$

C. $\frac{2(5x-26)}{\sqrt{3-x}} + c$

D. $\frac{2(26-5x)}{\sqrt{3-x}} + c$

Answer: C

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101. $\int (5 - 3x)(2 - 3x)^{\frac{-3}{2}} dx =$

A. $\frac{2}{3}(11 - 3x)\sqrt{2 - 3x} + c$

B. $\frac{2}{9}(11 - 3x)\sqrt{2 - 3x} + c$

C. $\frac{2}{3}(3x - 11)\sqrt{2 - 3x} + c$

D. $\frac{2}{9}(3x - 11)\sqrt{2 - 3x} + c$

Answer: D

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102. $\int \frac{1}{\sqrt{x + a} + \sqrt{x + b}} dx$

A. $\frac{2}{5(a - b)}\left((x + a)^{\frac{5}{2}} + (x + b)^{\frac{5}{2}}\right) - \frac{2}{3(a - b)}\left((x + b)^{\frac{3}{2}} + (x + a)^{\frac{3}{2}}\right) + c$

B. $\frac{2}{5(a - b)}\left((x + a)^{\frac{5}{2}} + (x + b)^{\frac{5}{2}}\right) + \frac{2}{3(a - b)}\left((x + b)^{\frac{3}{2}} + (x + a)^{\frac{3}{2}}\right) + c$

C. $\frac{2}{5(a-b)}\left((x+a)^{\frac{5}{2}}-(x+b)^{\frac{5}{2}}\right)-\frac{2}{3(a-b)}\left(b(x+b)^{\frac{3}{2}}-(x+a)^{\frac{3}{2}}\right)+c$

D. $\frac{2}{5(a-b)}\left((x+a)^{\frac{5}{2}}-(x+b)^{\frac{5}{2}}\right)+\frac{2}{3(a-b)}\left(b(x+b)^{\frac{3}{2}}-a(x+a)^{\frac{3}{2}}\right)+c$

Answer: D

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103. Evaluate: $\int \frac{x^7}{\left(1-x^2\right)^5}\,dx$.

A. $\frac{-x^8}{4\left(1-x^2\right)^4}+c$

B. $\frac{x^8}{4\left(1-x^2\right)^4}+c$

C. $\frac{-x^8}{8\left(1-x^2\right)^4}+c$

D. $\frac{x^8}{8\left(1-x^2\right)^4}+c$

Answer: D

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104. $\int \frac{x^7}{\left(1+x^4\right)^2} dx =$

A. $\frac{1}{4}\left(\log\left|1+x^4\right| - \frac{1}{1+x^4}\right) + c$

B. $\frac{1}{4}\left(\log\left|1+x^4\right| + \frac{1}{1+x^4}\right) + c$

C. $\frac{1}{4}\left(\log\left|1+x^4\right| - \frac{1}{\left(1+x^4\right)^2}\right) + c$

D. $\frac{1}{4}\left(\log\left|1+x^4\right| + \frac{1}{\left(1+x^4\right)^2}\right) + c$

Answer: B

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105. $\int \frac{dx}{\sqrt{1-x}} =$

A. $2\sqrt{1-x}+c$

B. $-2\sqrt{1-x}+c$

C. $-\sin^{-1}\sqrt{x}+c$

D. $\sin^{-1}\sqrt{x}+c$

Answer: B

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106. $\int \frac{dx}{(4x+5)^2+1} =$

A. $\frac{1}{4}\cot^{-1}(4x+5)+c$

B. $\frac{1}{4}\tan^{-1}(4x+5)+c$

C. $\cot^{-1}(4x+5)+c$

D. $\tan^{-1}(4x+5)+c$

Answer: B

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107. $\int \frac{(x-1)^2}{\left(x^2+1\right)^2} dx =$

A. $\cot^{-1}x - \frac{1}{x^2+1} + c$

B. $\cot^{-1}x + \frac{1}{x^2+1} + c$

C. $\tan^{-1}x - \frac{1}{x^2+1} + c$

D. $\tan^{-1}x + \frac{1}{x^2+1} + c$

Answer: D

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108. $\int \frac{dx}{(1-2x)\sqrt{(1-2x)^2-1}} =$

A. $\frac{-1}{2}\sec^{-1}(1-2x) + c$

B. $\frac{1}{2}\sec^{-1}(1-2x) + c$

C. $-\sec^{-1}(1-2x)+c$

D. $\sec^{-1}(1-2x)+c$

Answer: A

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109. $\int \frac{dx}{(4x-1)\sqrt{(4x-1)^2-1}} =$

A. $\sec^{-1}(4x-1)+c$

B. $-\sec^{-1}(4x-1)+c$

C. $\frac{1}{4}\sec^{-1}(4x-1)+c$

D. $\frac{-1}{4}\sec^{-1}(4x-1)+c$

Answer: C

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110. $\int \frac{x^2+1}{x^4+1} dx$

A. $\frac{1}{\sqrt{2}} \tan^{-1}\left(\frac{x^2-1}{\sqrt{2}x}\right) + c$

B. $\frac{-1}{\sqrt{2}} \tan^{-1}\left(\frac{x^2-1}{\sqrt{2}x}\right) + c$

C. $\frac{1}{\sqrt{2}} \tan^{-1}\left(\frac{x^2+1}{\sqrt{2}x}\right) + c$

D. $\frac{-1}{\sqrt{2}} \tan^{-1}\left(\frac{x^2+1}{\sqrt{2}x}\right) + c$

Answer: A

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111. Evaluate: $\int \frac{x^2-1}{x^4+1} dx$

A. $\frac{1}{2\sqrt{2}} \log\left|\frac{x+\frac{1}{x}+\sqrt{2}}{x+\frac{1}{x}-\sqrt{2}}\right| + c$

B. $\frac{1}{2\sqrt{2}}\log\left|\frac{x+\frac{1}{x}-\sqrt{2}}{x+\frac{1}{x}+\sqrt{2}}\right|+c$

C. $\frac{1}{\sqrt{2}}\log\left|\frac{x+\frac{1}{x}+\sqrt{2}}{x+\frac{1}{x}-\sqrt{2}}\right|+c$

D. $\frac{1}{\sqrt{2}}\log\left|\frac{x+\frac{1}{x}-\sqrt{2}}{x+\frac{1}{x}+\sqrt{2}}\right|+c$

Answer: B

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112. $\int\frac{x^2-1}{x^4+x^2+1}dx=$

A. $\frac{1}{2}\log\left|\frac{x^2-x+1}{x^2+x+1}\right|+c$

B. $\frac{1}{2}\log\left|\frac{x^2+x+1}{x^2-x+1}\right|+c$

C. $\frac{1}{4}\log\left|\frac{x^2 - x + 1}{x^2 + x + 1}\right| + c$

D. $\frac{1}{4}\log\left|\frac{x^2 + x + 1}{x^2 - x + 1}\right| + c$

Answer: A

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113. $\int \frac{x^2 + 1}{x^4 + x^2 + 1} dx$

A. $\frac{1}{\sqrt{3}}\tan^{-1}\left(\frac{x^2 - 1}{\sqrt{3}x}\right) + c$

B. $\frac{1}{\sqrt{3}}\tan^{-1}\left(\frac{x^2 + 1}{\sqrt{3}x}\right) + c$

C. $\frac{1}{2\sqrt{3}}\tan^{-1}\left(\frac{x^2 - 1}{\sqrt{3}x}\right) + c$

D. $\frac{1}{2\sqrt{3}}\tan^{-1}\left(\frac{x^2 + 1}{\sqrt{3}x}\right) + c$

Answer: A

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114. $\int \frac{\sin\sqrt{x}}{\sqrt{x}} dx = ?$

A. $\cos\sqrt{x} + c$

B. $2\cos\sqrt{x} + c$

C. $-\cos\sqrt{x} + c$

D. $-\cos\sqrt{x} + c$

Answer: D

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115. $\int x^9 \sec^2 x^{10} dx =$

A. $\frac{1}{10}\tan x^{10} + c$

B. $\frac{-1}{10}\tan x^{10} + c$

C. $\frac{1}{10}\cot x^{10} + c$

D. $\frac{-1}{10}\cot x^{10} + c$

Answer: A

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116. $\int e^x(1 + x)\cos^2\left(xe^x\right)dx =$

A. $\frac{xe^x}{2} + \frac{\sin\left(2xe^x\right)}{4} + c$

B. $\frac{xe^x}{2} - \frac{\sin\left(2xe^x\right)}{4} + c$

C. $\frac{xe^x}{2} + \frac{\sin\left(2xe^x\right)}{2} + c$

D. $\frac{xe^x}{2} - \frac{\sin\left(2xe^x\right)}{2} + c$

Answer: A

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117. $\int \frac{e^x(1+x)}{\cos^2\left(xe^x\right)}dx =$

A. $e^x\tan^2\left(xe^x\right)+c$

B. $\tan^2\left(xe^x\right)+c$

C. $e^x\tan\left(xe^x\right)+c$

D. $\tan\left(xe^x\right)+c$

Answer: D

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118. Evaluate: (i) $\int \frac{\sin\sqrt{x}}{\sqrt{x}}dx$ (ii) $\int \frac{(x+1)e^x}{\sin^2\left(x\,e^x\right)}dx$

A. $\cot\left(xe^x\right)+c$

B. $-\cot\left(xe^x\right)+c$

C. $x\cot\left(xe^x\right)+c$

D. $-x\cot\left(xe^x\right)+c$

Answer: B

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119. $\int \sin^4 x\cos^3 x dx =$

A. $\frac{\sin^5 x}{5}+\frac{\sin^7 x}{7}+c$

B. $\frac{\sin^5 x}{5}-\frac{\sin^7 x}{7}+c$

C. $\frac{\sin^7 x}{7}+\frac{\sin^5 x}{5}+c$

D. $\frac{-\sin^7 x}{7}-\frac{\sin^5 x}{5}+c$

Answer: B

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120. $\int \frac{\sec^8 x}{\text{cosec } x} dx =$

A. $\frac{\sec^8 x}{8} + c$

B. $\frac{\sec^7 x}{7} + c$

C. $\frac{\sec^6 x}{6} + c$

D. $\frac{\sec^9 x}{9} + c$

Answer: B

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121. $\int x^2 \cos x^3 \sqrt{\sin^7 x^3} dx =$

A. $\frac{2}{3}\sqrt{\sin^9 x^3} + c$

B. $\frac{1}{3}\sqrt{\sin^9 x^3} + c$

C. $\frac{2}{27}\sqrt{\sin^9 x^3} + c$

D. $\frac{1}{27}\sqrt{\sin^9 x^3} + c$

Answer: C

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122. $\int \frac{\cos^7 x}{\sin x} dx =$

A. $\log|\sin x| - \frac{3}{2}\sin^2 x + \frac{3}{4}\sin^4 x - \frac{1}{6}\sin^6 x + c$

B. $\log|\sin x| - \frac{3}{4}\sin^2 x + \frac{3}{2}\sin^4 x - \frac{1}{6}\sin^6 x + c$

C. $\log|\sin x| - \frac{3}{2}\sin^2 x + \frac{3}{2}\sin^4 x - \frac{1}{6}\sin^6 x + c$

D. $\log|\sin x| - \frac{3}{4}\sin^2 x + \frac{3}{4}\sin^4 x - \frac{1}{6}\sin^6 x + c$

Answer: A

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123. $\int e^{3\log\sin x} \cot x dx =$

A. $3\sin^3 x + c$

B. $-3\sin^3 x + c$

C. $\frac{\sin^3 x}{3} + c$

D. $\frac{-\sin^3 x}{3} + c$

Answer: C

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124. $\int \sqrt{\frac{\cos^3 x}{\sin^{11} x}} dx$

A. $\frac{2}{5}(\cot x)^{\frac{5}{2}} - \frac{2}{9}(\cot x)^{\frac{9}{2}} + c$

B. $\frac{-2}{5}(\cot x)^{\frac{5}{2}} + \frac{2}{9}(\cot x)^{\frac{9}{2}} + c$

C. $\frac{-2}{5}(\cot x)^{\frac{5}{2}} - \frac{2}{9}(\cot x)^{\frac{9}{2}} + c$

D. $\frac{2}{5}(\cot x)^{\frac{5}{2}} + \frac{2}{9}(\cot x)^{\frac{9}{2}} + c$

Answer: C

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125. $\int \tan x \sec^2 x \sqrt{1 - \tan^2 x} dx$

A. $\frac{-1}{3}\left(1 - \tan^2 x\right)^{\frac{3}{2}} + c$

B. $\frac{1}{3}\left(1 - \tan^2 x\right)^{\frac{3}{2}} + c$

C. $\frac{-2}{3}\left(1 - \tan^2 x\right)^{\frac{3}{2}} + c$

D. $\frac{2}{3}\left(1 - \tan^2 x\right)^{\frac{3}{2}} + c$

Answer: A

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126. $\int \sec^{\frac{2}{3}} x dx =$

A. $-3(\tan x)^{\frac{1}{3}} + c$

B. $-3(\tan x)^{\frac{-1}{3}} + c$

C. $3(\tan x)^{\frac{-1}{3}} + c$

D. $(\tan x)^{\frac{-1}{3}} + c$

Answer: B

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127. $\int \frac{x\sec^2 x^2}{\sqrt{\tan^3 x^2}} dx =$

A. $\frac{1}{\sqrt{\tan x^2}} + c$

B. $\frac{2}{\sqrt{\tan x^2}} + c$

C. $\frac{-1}{\sqrt{\tan x^2}} + c$

D. $\frac{-2}{\sqrt{\tan x^2}} + c$

Answer: C

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128. $\int \frac{\sin^3 2x}{\cos^5 2x} dx =$

A. $\tan^4 x + c$

B. $\tan 4x + c$

C. $\tan^4 2x + x + c$

D. $\frac{1}{8}\tan^4 2x + c$

Answer: D

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129. $\int \frac{(\sec x + \operatorname{cosec} x)(\sec x - \operatorname{cosec} x)}{\tan x + \cot x} dx =$

A. $(\log|\tan x + \cot x|)^2 + c$

B. $-(\log|\tan x + \cot x|)^2 + c$

C. $\log|\tan x + \cot x| + c$

D. $-\log|\tan x + \cot x| + c$

Answer: C

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130. Find $\int \frac{dx}{\sin x \cos^3 x}$.

A. $\tan^4 x - \log|\tan x| + c$

B. $\tan^4 x + \log|\tan x| + c$

C. $\frac{1}{2}\tan^2 x + \log|\tan x| + c$

D. $\frac{1}{2}\tan^2 x - \log|\tan x| + c$

Answer: C

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131. Evaluate: $\int \frac{\sec x \tan x}{3\sec x + 5} dx$

A. $\frac{-1}{3}\log|3\sec x + 5| + c$

B. $\frac{1}{3}\log|3\sec x + 5| + c$

C. $-3\log|3\sec x + 5| + c$

D. $3\log|3\sec x + 5| + c$

Answer: B

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132. Evaluate $\int \frac{\sqrt{\tan x}}{\sin x.\cos x} dx$

A. $2\sqrt{\sec x} + c$

B. $2\sqrt{\tan x} + c$

C. $\frac{2}{\sqrt{\tan x}} + c$

D. $\frac{2}{\sqrt{\sec x}} + c$

Answer: B

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133. $\int \sec^n x \tan x dx =$

A. $\frac{\sec^{n+1}x}{n+1}+c$

B. $\frac{\sec^{n}x}{n}+c$

C. $\frac{\tan^{n+1}x}{n+1}+c$

D. $\frac{\tan^{n}x}{n}+c$

Answer: B

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134. $\int\left(\sec^4 x.\ \mathrm{cosec}^2 x\right)dx =$

A. $\frac{1}{3}\tan^3 x + 2\tan x - \cot x + c$

B. $\frac{1}{3}\tan^3 x - 2\tan x + \cot x + c$

C. $\frac{1}{3}\tan^3 x - 2\tan x - \cot x + c$

D. $\frac{1}{3}\tan^3 x + 2\tan x + \cot x + c$

Answer: A

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135. $\int \frac{dx}{\sin x \cos x + 2\cos^2 x} =$

A. $-\log|\tan x + 2| + c$

B. $\log|\tan x + 2| + c$

C. $-2\log|\tan x + 2| + c$

D. $2\log|\tan x + 2| + c$

Answer: B

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136. $\int \frac{x}{1 - x\cot x} dx =$

A. $\log|\cos x - x\sin x| + c$

B. $\log|x\sin x - \cos x| + c$

C. $\log|\sin x - x\cos x| + c$

D. $\log|\cos x + x\sin x| + c$

Answer: C

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137. $\int \frac{(\cos x - \sin x)}{(1 + \sin 2x)} dx$

A. $\frac{-1}{\cos x + \sin x} + c$

B. $\frac{1}{\cos x + \sin x} + c$

C. $\frac{1}{\cos x - \sin x} + c$

D. $\frac{1}{\sin x - \cos x} + c$

Answer: A

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138. $\int \frac{\cos x + x\sin x}{x^2 + x\cos x} dx = \ldots.$

A. $\log\left|\frac{x}{x+\cos x}\right|+c$

B. $\log\left|\frac{x+\cos x}{x}\right|+c$

C. $\log\left|\frac{x\sin x}{x+\cos x}\right|+c$

D. $\log\left|\frac{x+\cos x}{x\sin x}\right|+c$

Answer: A

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139. $\int\frac{1-\cot x}{1+\cot x}dx$

A. $-\log|\sin x-\cos x|+c$

B. $\log|\sin x-\cos x|+c$

C. $-\log|\sin x+\cos x|+c$

D. $\log|\sin x+\cos x|+c$

Answer: C

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140. $\int \frac{\sin 2x}{1+\sin^2 x} dx =$

A. $\log|\sin 2x| + c$

B. $\log\left|1+\sin^2 x\right| + c$

C. $\frac{1}{2}\log\left|1+\sin^2 x\right| + c$

D. $\tan^{-1}(\sin x) + c$

Answer: B

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141. $\int \frac{\sin 2x}{1+\cos^2 x} dx =$

A. $\frac{1}{2}\log\left|1+\cos^2 x\right| + c$

B. $\frac{1}{2}\log|1+\cos 2x| + c$

C. $2\log\left|1+\cos^2 x\right|+c$

D. $-\log\left|1+\cos^2 x\right|+c$

Answer: D

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142. $\int \frac{\sin 2x dx}{a^2\sin^2 x + b^2\cos^2 x}$

A. $\frac{-1}{a^2+b^2}\log\left|a^2\sin^2 x + b^2\cos^2 x\right|+c$

B. $\frac{1}{a^2+b^2}\log\left|a^2\sin^2 x + b^2\cos^2 x\right|+c$

C. $\frac{-1}{a^2-b^2}\log\left|a^2\sin^2 x + b^2\cos^2 x\right|+c$

D. $\frac{1}{a^2-b^2}\log\left|a^2\sin^2 x + b^2\cos^2 x\right|+c$

Answer: D

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143. $\int \frac{\sin 2x}{a\sin^2 x + b\cos^2 x} dx =$

A. $\frac{-1}{a+b}\log\left|a\sin^2 x + b\cos^2 x\right| + c$

B. $\frac{-1}{a-b}\log\left|a\sin^2 x + b\cos^2 x\right| + c$

C. $\frac{1}{a-b}\log\left|a\sin^2 x + b\cos^2 x\right| + c$

D. $\frac{1}{a+b}\log\left|a\sin^2 x + b\cos^2 x\right| + c$

Answer: C

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144. $\int \frac{e^{\log\tan x}}{3\tan^2 x + 2} dx =$

A. $\frac{1}{6}\log\left|3\sin^2 x + 2\cos^2 x\right| + c$

B. $\frac{1}{2}\log\left|3\sin^2 x + 2\cos^2 x\right| + c$

C. $\frac{1}{3}\log\left|3\sin^2 x + 2\cos^2 x\right| + c$

D. $\frac{1}{12}\log\left|3\sin^2 x + 2\cos^2 x\right| + c$

Answer: B

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145. Evaluate $\int \frac{\sec^2 x \tan x}{\sec^2 x + \tan^2 x} dx$

A. $\frac{-1}{2}\log\left|\sec^2 x + \tan^2 x\right| + c$

B. $\frac{1}{2}\log\left|\sec^2 x + \tan^2 x\right| + c$

C. $\frac{-1}{4}\log\left|\sec^2 x + \tan^2 x\right| + c$

D. $\frac{1}{4}\log\left|\sec^2 x + \tan^2 x\right| + c$

Answer: D

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146. $\int \frac{\cos 2x}{(\sin x + \cos x)^2} dx$ is equal to :

A. $\log|\cos x + \sin x| + c$

B. $-\log|\cos x + \sin x| + c$

C. $\log|\cos x - \sin x| + c$

D. $-\log|\cos x - \sin x| + c$

Answer: A

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147. Evaluate: $\int \frac{\cos 2x + x + 1}{x^2 + \sin 2x + 2x} dx$

A. $2\log\left|x^2 + \sin 2x + 2x\right| + c$

B. $\log\left|x^2 + \sin 2x + 2x\right| + c$

C. $\frac{1}{2}\log\left|x^2 + \sin 2x + 2x\right| + c$

D. $\frac{1}{4}\log\left|x^2 + \sin 2x + 2x\right| + c$

Answer: C

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148. $\int \frac{\sin 2x}{\sin^4 x + \cos^4 x} dx$

A. $\cot^{-1}\left(\tan^2 x\right) + c$

B. $\tan^{-1}\left(\tan^2 x\right) + c$

C. $\cot^{-1}\left(\cot^2 x\right) + c$

D. $\tan^{-1}\left(\cot^2 x\right) + c$

Answer: B

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149. $\int \frac{\sin 2x}{\sin^4 x + \cos^4 x} dx$

A. $\sqrt{2}\tan^{-1}\left(\frac{\tan^2 x - 1}{\sqrt{2}\tan x}\right) + c$

B. $\sqrt{2}\cot^{-1}\left(\frac{\tan^2 x - 1}{\sqrt{2}\tan x}\right) + c$

C. $\frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{\tan^2 x - 1}{\sqrt{2}\tan x}\right) + c$

D. $\frac{1}{\sqrt{2}}\cot^{-1}\left(\frac{\tan^2 x - 1}{\sqrt{2}\tan x}\right) + c$

Answer: C

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150. $\frac{1}{\sqrt{\sin^3 x \sin(x + \alpha)}}$

A. $2\ \text{cosec}\ \alpha\sqrt{\cos\alpha + \sin\alpha\cot x} + c$

B. $-2\ \text{cosec}\ \alpha\sqrt{\cos\alpha + \sin\alpha\cot x} + c$

C. $\text{cosec}\ \alpha\sqrt{\cos\alpha + \sin\alpha\cot x} + c$

D. $-\ \text{cosec}\ \alpha\sqrt{\cos\alpha + \sin\alpha\cot x} + c$

Answer: B

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151. $\int \frac{\sqrt{\cos 2\theta}}{\sin\theta} d\theta =$

A. $\log\left|\cot\theta + \sqrt{\cot^2\theta - 1}\right| + \sqrt{2}\log\left|\cos\theta + \sqrt{\cos^2\theta - \frac{1}{2}}\right| + c$

B. $-\log\left|\cot\theta + \sqrt{\cot^2\theta - 1}\right| + \sqrt{2}\log\left|\cos\theta + \sqrt{\cos^2\theta - \frac{1}{2}}\right| + c$

C. $\log\left|\cot\theta + \sqrt{\cot^2\theta - 1}\right| - \sqrt{2}\log\left|\cos\theta + \sqrt{\cos^2\theta - \frac{1}{2}}\right| + c$

D. $-\log\left|\cot\theta + \sqrt{\cot^2\theta - 1}\right| - \sqrt{2}\log\left|\cos\theta + \sqrt{\cos^2\theta - \frac{1}{2}}\right| + c$

Answer: B

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152. $\int \frac{\sec x dx}{\sqrt{\cos 2x}} =$

A. $\sin^{-1}(\tan x) + c$

B. $\cos^{-1}(\tan x) + c$

C. $\tan x + c$

D. $\cot x + c$

Answer: A

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153. $\int \frac{(\sin\theta + \cos\theta)}{\sqrt{\sin 2\theta}} d\theta$ is equal to

A. $\log\left|\cos\theta - \sin\theta + \sqrt{\sin 2\theta}\right| + c$

B. $\sin^{-1}(\sin\theta - \cos\theta) + c$

C. $\log\left|\sin\theta - \cos\theta + \sqrt{\sin 2\theta}\right| + c$

D. $si^{-1}(\sin\theta + \cos\theta) + c$

Answer: B

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154. Evaluate: $\int \sqrt{\tan x} dx$

A. $\frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{\tan x - 1}{\sqrt{2\tan x}}\right) - \frac{1}{2\sqrt{2}}\log\left|\frac{\tan x - \sqrt{2\tan x} + 1}{\tan x + \sqrt{2\tan x} + 1}\right| + c$

B. $\frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{\tan x - 1}{\sqrt{2\tan x}}\right) + \frac{1}{2\sqrt{2}}\log\left|\frac{\tan x - \sqrt{2\tan x} + 1}{\tan x + \sqrt{2\tan x} + 1}\right| + c$

C. $\frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{\tan x - 1}{\sqrt{2\tan x}}\right) + \frac{1}{\sqrt{2}}\log\left|\frac{\tan x - \sqrt{2\tan x} + 1}{\tan x + \sqrt{2\tan x} + 1}\right| + c$

D. $\frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{\tan x - 1}{\sqrt{2\tan x}}\right) + \frac{1}{\sqrt{2}}\log\left|\frac{\tan x - \sqrt{2\tan x} + 1}{\tan x + \sqrt{2\tan x} + 1}\right| + c$

Answer: B

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155. Evaluate $\int\sqrt{\cot x}dx$.

A. $\frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{\cot x - 1}{\sqrt{2\cot x}}\right) - \frac{1}{2\sqrt{2}}\log\left|\frac{1 + \cot x - \sqrt{2\cot x}}{1 + \cot x + \sqrt{2\cot x}}\right| + c$

B. $\frac{-1}{\sqrt{2}}\tan^{-1}\left(\frac{\cot x - 1}{\sqrt{2\cot x}}\right) + \frac{1}{2\sqrt{2}}\log\left|\frac{1 + \cot x - \sqrt{2\cot x}}{1 + \cot x + \sqrt{2\cot x}}\right| + c$

C. $\frac{-1}{\sqrt{2}}\tan^{-1}\left(\frac{\cot x - 1}{\sqrt{2\cot x}}\right) + \frac{1}{2\sqrt{2}}\log\left|\frac{1 + \cot x - \sqrt{2\cot x}}{1 + \cot x + \sqrt{2\cot x}}\right| + c$

D. $\frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{\cot x - 1}{\sqrt{2\cot x}}\right) + \frac{1}{2\sqrt{2}}\log\left|\frac{1 + \cot x - \sqrt{2\cot x}}{1 + \cot x + \sqrt{2\cot x}}\right| + c$

Answer: C

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156. For which of the following functions, the substitution $x^2 = t$ is applicable

A. $\int x^6 \tan^{-1} x^3 dx$

B. $\int \tan^{-1}\left(\frac{2x}{1-x^2}\right) dx$

C. $\int x^3 \cos x^2 dx$

D. $\int x^4 \cos^2 dx$

Answer: C

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157. $\int \frac{dx}{\sqrt{1-x^2}\left(2+3\sin^{-1}x\right)} =$

A. $3\log\left|2+3\sin^{-1}x\right|+c$

B. $-3\log\left|2+3\sin^{-1}x\right|+c$

C. $\frac{1}{3}\log\left|2+3\sin^{-1}x\right|+c$

D. $\frac{-1}{3}\log\left|2+3\sin^{-1}x\right|+c$

Answer: C

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158. Evaluate: $\int \frac{1}{\sqrt{\left(1-x^2\right)\left\{9+\left(\sin^{-1}x\right)^2\right\}}}dx$

A. $\log\left|3+\sin^{-1}x\right|+c$

B. $-\log\left|3+\sin^{-1}x\right|+c$

C. $\log\left|\sqrt{9+\left(\sin^{-1}x\right)^2}+\sin^{-1}x\right|+c$

D. $-\log\left|9+\sin^{-1}x\right|+c$

Answer: C

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159. Evaluate: (i) $\int \frac{\left(\sin^{-1}x\right)^3}{\sqrt{1-x^2}}\,dx$ (ii) $\int \left(\frac{\sin(2+3\log x)}{x}\,dx$

A. $\frac{-2}{5}\left(\sin^{-1}x\right)^{\frac{5}{2}}+c$

B. $\frac{2}{5}\left(\sin^{-1}x\right)^{\frac{5}{2}}+c$

C. $\frac{-5}{2}\left(\sin^{-1}x\right)^{\frac{5}{2}}+c$

D. $\frac{5}{2}\left(\sin^{-1}x\right)^{\frac{5}{2}}+c$

Answer: B

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160. $\int \frac{x\sin^{-1}\left(x^2\right)}{\sqrt{1-x^4}}dx =$

A. $\frac{1}{2}\left(\sin^{-1}x^2\right)^2+c$

B. $\frac{1}{4}\left(\sin^{-1}x^2\right)^2 + c$

C. $\frac{1}{2}\sin^{-1}x^4 + c$

D. $\frac{1}{4}\sin^{-1}x^4 + c$

Answer: B

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161. Evaluate: $\int \frac{x^2\tan^{-1}x^3}{1+x^6}dx$

A. $\frac{1}{2}\left(\tan^{-1}x^3\right)^2 + c$

B. $\frac{1}{4}\left(\tan^{-1}x^3\right)^2 + c$

C. $\frac{1}{6}\left(\tan^{-1}x^3\right)^2 + c$

D. $\frac{1}{12}\left(\tan^{-1}x^3\right)^2 + c$

Answer: C

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162. $\int \left(x + \cot^{-1} x\right)\left(\frac{x^2}{x^2+1}\right) dx =$

A. $\left(x + \cot^{-1} x\right)^2 + c$

B. $-\left(x + \cot^{-1} x\right)^2 + c$

C. $\frac{1}{2}\left(x + \cot^{-1} x\right)^2 + c$

D. $\frac{-1}{2}\left(x + \cot^{-1} x\right)^2 + c$

Answer: C

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163. $\int \cos\left(2\cot^{-1}\sqrt{\frac{1-x}{1+x}}\right) dx =$

A. $\frac{1}{2} + \frac{x^2}{4} + c$

B. $\frac{1}{2} - \frac{x^2}{4} + c$

C. $\frac{1}{2} + \frac{x^2}{2} + c$

D. $\frac{1}{2} - \frac{x^2}{2} + c$

Answer: D

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164. To evalute $\int x^3 e^{3x^2+5} dx$ the simplest way is to

A. substitute $x^2 = t$

B. substitute $3x^2 = t$

C. integration by parts

D. can not evaluate

Answer: B

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165. $\int \frac{e^{5x}}{\sqrt{e^{5x}+1}} dx =$

A. $\frac{2}{5}\sqrt{e^{5x}+1}+c$

B. $\frac{5}{2}\sqrt{e^{5x}+1}+c$

C. $\frac{1}{5}\sqrt{e^{5x}+1}+c$

D. $\frac{1}{2}\sqrt{e^{5x}+1}+c$

Answer: A

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166. Evaluate: $\int \frac{e^x+1}{e^x+x}dx$

A. $\log\left|e^x+x\right|+c$

B. $-\log\left|e^x+x\right|+c$

C. $\log\left|e^x+1\right|+c$

D. $-\log\left|e^x+1\right|+c$

Answer: A

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167. Evaluate: $\int \frac{e^{3x}}{e^{3x}+1}dx$

A. $\frac{1}{3}\log\left|e^{3x}+1\right|+c$

B. $\frac{1}{3}\log\left|e^{-3x}+1\right|+c$

C. $3\log\left|e^{3x}+1\right|+c$

D. $3\log\left|e^{-3x}+1\right|+c$

Answer: A

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168. $\int \frac{x^{e-1}+e^{x-1}}{x^e-e^x}dx$

A. $\frac{1}{\log\left|x^e+e^x\right|}+c$

B. $\frac{1}{e}\log\left|x^e+e^x\right|+c$

C. $\log\left|x^e+e^x\right|+c$

D. $e\log\left|x^e + e^x\right| + c$

Answer: B

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169. $\int\left(\frac{x^2+2}{x^2+1}\right)\left(a^{x+\tan^{-1}}\right)dx =$

A. $(\log a)a^{x+\tan^{-1}x} + c$

B. $\frac{x+\tan^{-1}x}{\log a} + c$

C. $\frac{a^{x+\tan^{-1}x}}{\log a} + c$

D. $(\log a)a\left(x+\tan^{-1}x\right) + c$

Answer: C

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170. $\int 7^{x\log x}(1+\log x)dx =$

A. $\frac{7^{x\log x}x}{\log 7}+c$

B. $\frac{7^{x\log x}}{\log 7}+c$

C. $7^{x\log x}x+c$

D. $7^{x\log x}+c$

Answer: B

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171. $\int \frac{x+2^x\log 2}{x^2+2^{x+1}}dx =$

A. $\frac{1}{2}\log\left|x^2 2+^{x+1}\right|+c$

B. $\frac{1}{4}\log\left|x^2+2^{x+1}\right|+c$

C. $\frac{-1}{2}\log\left|x^2+2^{x+1}\right|+c$

D. $\frac{-1}{4}\log\left|x^2+2^{x+1}\right|+c$

Answer: A

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172. Evaluate: $\int \frac{10x^9 + 10^x(\log)_e 10}{10^x + x^{10}} dx$

A. $\log\left|10^x + x^{10}\right| + c$

B. $10\log\left|10^x + x^{10}\right| + c$

C. $-\log\left|10^x + x^{10}\right| + c$

D. $-10\log\left|10^x + x^{10}\right| + c$

Answer: A

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173. $e^{3\log x}\left(x^4 + 1\right)^{-1}$

A. $\log\left|x^4 + 1\right| + c$

B. $-\log\left|x^4+1\right|+c$

C. $\frac{!}{4}\log\left|x^4+1\right|+c$

D. $\frac{-1}{4}\log\left|x^4+1\right|+c$

Answer: C

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174. $\int\frac{dx}{a+be^x}=$

A. $\frac{-1}{a}\log\left|ae^{-x}+b\right|+c$

B. $\frac{1}{a}\log\left|ae^{-x}+b\right|+c$

C. $\frac{-1}{b}\log\left|ae^{-x}+b\right|+c$

D. $\frac{1}{b}\log\left|ae^{-x}+b\right|+c$

Answer: A

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175. $\int \frac{dx}{e^x + e^{-x}}$

A. $\tan^{-1} e^x + c$

B. $\cot^{-1} e^x + c$

C. $e^x \tan^{-1} e^x + c$

D. $e^x \cot^{-1} e^x + c$

Answer: A

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176. The value of the integral $\int \frac{dx}{\left(e^x + e^{-x}\right)}$ is

A. $\frac{-1}{2\left(e^{2x} + 1\right)} + c$

B. $\frac{1}{2\left(e^{2x} + 1\right)} + c$

C. $\frac{-1}{e^{2x} + 1} + c$

D. $\frac{1}{e^{2x}+1}+c$

Answer: A

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177. $\int \frac{dx}{1+e^x}$

A. $x - 2\log\left|e^x+1\right|+c$

B. $x + 2\log\left|e^x+1\right|+c$

C. $x - \log\left|e^x+1\right|+c$

D. $x + \log\left|e^x+1\right|+c$

Answer: C

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178. $\int \frac{dx}{1+e^{-x}}$ is equal to

A. $\log\left|e^{-x}+1\right|+c$

B. $-\log\left|e^{-x}+1\right|+c$

C. $\log\left|e^{x}+1\right|+c$

D. $-\log\left|e^{x}+1\right|+c$

Answer: C

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179. $\int \frac{e^{x}-1}{e^{x}+1}dx$

A. $x+\log\left|\frac{e^{x}}{e^{x}+1}\right|+c$

B. $x+\log\left|\frac{e^{x}+1}{e^{x}}\right|+c$

C. $x+2\log\left|\frac{e^{x}}{e^{x}+1}\right|+c$

D. $x+2\log\left|\frac{e^{x}+1}{e^{x}}\right|+c$

Answer: D

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180. $\int \frac{dx}{\left(1+e^{x}\right)\left(1+e^{-x}\right)} =$

A. $\frac{-1}{1+e^{x}}+c$

B. $\frac{1}{1+e^{x}}+c$

C. $\frac{e^{x}}{1+e^{x}}+c$

D. $\frac{-e^{x}}{1+e^{x}}+c$

Answer: A

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181. $\int \frac{e^{-x}}{1+e^{x}}dx =$

A. $\log\left|e^x+1\right|-x-e^{-x}-1+c$

B. $\log\left|e^x+1\right|+x-e^{-x}-1+c$

C. $\log\left|e^x+1\right|-x+e^{-x}-1+c$

D. $\log\left|e^x+1\right|+x+e^{-x}-1+c$

Answer: A

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182. $\int\frac{e^x+1}{e^x-1}dx=$

A. $\log\left|e^x-1\right|+x+c$

B. $2\log\left|e^x-1\right|+x+c$

C. $\log\left|e^x-1\right|-x+c$

D. $2\log\left|e^x-1\right|-x+c$

Answer: D

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183. Evaluate: $\int \frac{e^2 - 1}{e^2 + 1} dx$.

A. $\log \left| e^x + e^{-x} \right| + c$

B. $-\log \left| e^x + e^{-x} \right| + c$

C. $\log \left| e^x - e^{-x} \right| + c$

D. $-\log \left| e^x - e^{-x} \right| + c$

Answer: A

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184. Evaluate: $\int \frac{e^2 - 1}{e^2 + 1} dx$.

A. $\frac{e^{2x} - 1}{e^{2x} + 1} + c$

B. $\frac{e^{2x} + 1}{e^{2x} - 1} + c$

C. $\log \left| e^{2x} + 1 \right| - x + c$

D. $\log\left|e^{2x}+1\right|+c$

Answer: C

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185. If $I=\int\frac{e^x}{e^{4x}+e^{2e}+1}dx.\ J=\int\frac{e^{-x}}{e^{-4x}+e^{-2x}+1}dx.$ Then for an arbitrary constant c, the value of J - I equal to

A. $\frac{1}{2}\log\left|\frac{e^{4x}-e^{2x}+1}{e^{4x}+e^{2x}+1}\right|+c$

B. $\frac{1}{2}\log\left|\frac{e^{4x}+e^{2x}+1}{e^{4x}-e^{2x}+1}\right|+c$

C. $\frac{1}{2}\log\left|\frac{e^{2x}-e^{x}+1}{e^{2x}+e^{x}+1}\right|+c$

D. $\frac{1}{2}\log\left|\frac{e^{2x}+e^{x}+1}{e^{4x}-e^{2x}+1}\right|+c$

Answer: C

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186. To find the value of $\int \frac{1+\log x}{x} dx$, the proper substitution is

A. $\log x = t$

B. $1 + \log x = t$

C. $\frac{1}{x} = t$

D. $x = t$

Answer: B

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187. $\int x^x (1 + \log x) dx$

A. $x^x + c$

B. $x^{2x} + c$

C. $x^x \log x + c$

D. $\frac{1}{2}(\log x)^2 + c$

Answer: A

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188. $\int \frac{1}{x}.\log x dx = \ldots . .$

A. $\log(\log x) + c$

B. $\frac{1}{2}(\log)^2 + c$

C. $2\log x + c$

D. $\log x + c$

Answer: B

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189. $\int \frac{(\log x)^n}{x} dx =$

A. $\frac{1}{n+1}(\log x)^{n+1} + c$

B. $\frac{1}{n}(\log x)^n + c$

C. $\frac{1}{n+1}\log x^{n+1} + c$

D. $\frac{1}{n}\log x^n + c$

Answer: A

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190. $\int \frac{1}{x^3}\left(\log x^x\right)^2 dx =$

A. $\frac{1}{3}x^3 \log x + c$

B. $\frac{1}{3}(\log x)^3 + c$

C. $3\log|\log x| + c$

D. $(\log x)^3 + c$

Answer: B

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191. $\int \frac{dx}{x(3+\log x)} =$

A. $-3\log|3+\log x| + c$

B. $3\log|3+\log x| + c$

C. $-\log|3+\log x| + c$

D. $\log|3+\log x| + c$

Answer: D

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192. $\int \frac{(x+1)(x+\log x)^4}{3x} dx =$

A. $\frac{1}{3}(x+\log x)^5 + c$

B. $\frac{1}{5}(x+\log x)^5 + c$

C. $\frac{1}{4}(x+\log x)^5 + c$

D. $\frac{1}{15}(x+\log x)^5 + c$

Answer: D

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193. The value of the integral $\int \frac{\log(x+1) - \log x}{x(x+1)} dx$ is

A. $\frac{1}{4}\left(\log\left|\frac{x+1}{x}\right|\right)^2 + c$

B. $\frac{-1}{4}\left(\log\left|\frac{x+1}{x}\right|\right)^2 + c$

C. $\frac{1}{2}\left(\log\left|\frac{x+1}{x}\right|\right)^2 + c$

D. $\frac{-1}{2}\left(\log\left|\frac{x+1}{x}\right|\right)^2 + c$

Answer: D

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194. $\int \frac{dx}{x.\log x.\log(\log x)} =$

A. $\log x + c$

B. $\log|\log(\log x)| + c$

C. $\log|\log x| + c$

D. $\log|x\log x| + c$

Answer: B

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195. $\int \frac{\sec x}{\log(\sec x + \tan x)} dx =$

A. $-\log|\sec x + \tan x| + c$

B. $\log|\sec x + \tan x| + c$

C. $-\log|\log(\sec x + \tan x)| + c$

D. $\log|\log(\sec x + \tan x)| + c$

Answer: D

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196. $\int \frac{\sec x \ \operatorname{cosec} \ x}{\log(\tan x)} dx$

A. $\log(\tan x) + c$

B. $\log|\log(\tan x)| + c$

C. $\sec^2 x \log(\tan x) + c$

D. $\sec^2 x \log|\log(\tan x)| + c$

Answer: B

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197. $\int \frac{\sec x \operatorname{cosec} x}{\log(\cot x)} dx =$

A. $-\log(\cot x) + c$

B. $-\log|\log(\cot x)| + c$

C. $\operatorname{cosec}^2 x \log|\log(\cot x)| + c$

D. $\cos ec^2 x \log(\cot x) + c$

Answer: B

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198. $\int \log\left(\tan\left(\frac{x}{2}\right)\right)\cos ec x dx =$

A. $\frac{1}{2}\left(\log\left|\tan\left(\frac{x}{2}\right)\right|\right)^2 + c$

B. $\frac{1}{4}\left(\log\left|\tan\left(\frac{x}{2}\right)\right|\right)^2 + c$

C. $2\left(\log\left|\tan\left(\frac{x}{2}\right)\right|\right)^2 + c$

D. $4\left(\log\left|\tan\left(\frac{x}{2}\right)\right|\right)^2 + c$

Answer: A

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199. $\int \frac{e^x \log\left(\sin e^x\right)}{\tan e^x} dx =$

A. $\frac{1}{2}\left(\log\left(\sin e^x\right)\right)^2 + c$

B. $\frac{-1}{2}\left(\log\left(\sin e^x\right)\right)^2 + c$

C. $2\left(\log\left(\sin e^x\right)\right)^2 + c$

D. $-2\left(\log\left(\sin e^x\right)\right)^2 + c$

Answer: A

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200. Evaluate: $\int \frac{(1 + \log x)^2}{1 + \log x^{x+1} + \left(\log x^{\sqrt{x}}\right)^2} dx$

A. $\log|1 + \log x| + c$

B. $\log\left|1 + \log\sqrt{x}\right| + c$

C. $\log|1 + x\log x| + c$

D. $\log|x + \log x| + c$

Answer: C

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201. $\int \sec x dx =$

A. $\log\left|\tan\left(\frac{\pi}{8} + \frac{x}{2}\right)\right| + c$

B. $-\log|\sec x - \tan x| + c$

C. $\log|\sec x - \tan x| + c$

D. $-\log|\sec x + \tan x| + c$

Answer: B

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202. $\int \frac{\cos 2x}{\cos x} dx =$

A. $2\sin x + \log|\sec x + \tan x| + c$

B. $2\sin x - \log|\sec x + \tan x| + c$

C. $\sin x + \log|\sec x + \tan x| + c$

D. $2\sin x - \log|\sec x + \tan x| + c$

Answer: B

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203. $\int \frac{\cos 2x}{\sin x} dx =$

A. $\log\left|\tan\left(\frac{x}{2}\right)\right| - 2\cos x + c$

B. $\log\left|\tan\left(\frac{x}{2}\right)\right| + 2\cos x + c$

C. $\frac{1}{2}\log\left|\tan\left(\frac{x}{2}\right)\right| - 2\cos x + c$

D. $\frac{1}{2}\log\left|\tan\left(\frac{x}{2}\right)\right| + 2\cos x + c$

Answer: B

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204. $\int \frac{\sin 3x}{\cos x} dx =$

A. $\log|\cos x| + 2\cos^2 x + c$

B. $\log|\sec x| + 2\cos^2 x + c$

C. $\log|\cos x| - 2\cos^2 x + c$

D. $\log|\sec x| - 2\cos^2 x + c$

Answer: C

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205. $\int \frac{dx}{\sin x \cos x} =$

A. $\log|\sin x| + c$

B. $-\log|\cos x| + c$

C. $\log|\tan x| + c$

D. $\log|\cot x| + c$

Answer: C

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206. $\int \frac{\sin x}{(1+\cos x)} dx$

A. $2\log\left|\sec\left(\frac{x}{2}\right)\right| + c$

B. $2\log\left|\cos\left(\frac{x}{2}\right)\right| + c$

C. $\frac{1}{2}\log\left|\sec\left(\frac{x}{2}\right)\right| + c$

D. $\frac{1}{2}\log\left|\cos\left(\frac{x}{2}\right)\right| + c$

Answer: A

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207. (i) $\int \frac{\cos x}{1+\cos x} dx$, (ii) $\int \frac{\sin x}{(1-\sin x)} dx$

A. $-\log|\sec x(\sec x+\tan x)|+c$

B. $\log|\sec x(\sec x+\tan x)|+c$

C. $-\log\left|\frac{\sec x}{\sec x+\tan x}\right|+c$

D. $\log\left|\frac{\sec x}{\sec x+\tan x}\right|+c$

Answer: B

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208. $\int \frac{1+x}{\sin x(x+\log x)} dx =$

A. $\log\left|\frac{\tan(x+\log x)}{2}\right|+c$

B. $\frac{1}{2}\log\left|\frac{\tan(x+\log x)}{2}\right|+c$

C. $\log\left|\tan\left(\frac{x+\log x}{2}\right)\right|+c$

D. $\frac{1}{2}\log\left|\tan\left(\frac{x+\log x}{2}\right)\right|+c$

Answer: C

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209. Evaluate: $\int\frac{1}{\cos 3x-\cos x}dx$

A. $\frac{-1}{2}(\log|\sec x+\tan x|-\operatorname{cosec} x)+c$

B. $\frac{-1}{2}(\log|\sec x+\tan x|+\operatorname{cosec} x)+c$

C. $\frac{-1}{4}(\log|\sec x+\tan x|-\operatorname{cosec} x)+c$

D. $\frac{-1}{4}(\log|\sec x+\tan x|+\operatorname{cosec} x)+c$

Answer: C

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210. $\int\frac{dx}{\cos x(1-\cos x)}=$

A. $\log|\sec x + \tan x| - \tan\left(\frac{x}{2}\right) + c$

B. $\log|\sec x + \tan x| + \tan\left(\frac{x}{2}\right) + c$

C. $\log|\sec x + \tan x| - \cot\left(\frac{x}{2}\right) + c$

D. $\log|\sec x + \tan x| + \cot\left(\frac{x}{2}\right) + c$

Answer: C

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211. $\int \frac{dx}{(1 + \cos 2x)\left(1 - \tan^2 x\right)} =$

A. $\frac{1}{2}\log|\sec 2x + \tan 2x| + c$

B. $\frac{1}{4}\log|\sec 2x + \tan 2x| + c$

C. $\frac{1}{2}\log|\sec x + \tan x| + c$

D. $\frac{1}{4}\log|\sec x + \tan x| + c$

Answer: B

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212. $\int \frac{1 + \tan^2 x}{1 - \tan^2 x} dx =$

A. $\frac{1}{2}\log|\sec 2x + \tan 2x| + c$

B. $\frac{-1}{2}\log|\sec 2x + \tan 2x| + c$

C. $2\log|\sec 2x + \tan 2x| + c$

D. $-2\log|\sec 2x + \tan 2x| + c$

Answer: A

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213. $\int \frac{1 - \tan x}{1 + \tan x} dx =$

A. $\log\left|\sec\left(\frac{\pi}{4} - x\right)\right| + c$

B. $\log\left|\cos\left(\frac{\pi}{4} + x\right)\right| + c$

C. $\log\left|\sin\left(\frac{\pi}{4}+x\right)\right|+c$

D. $\log\left|\sin\left(\frac{\pi}{4}-x\right)\right|+c$

Answer: C

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214. $\int\frac{\sin 2x}{\cos^4 x-\sin^4 x}dx=$

A. $\frac{1}{2}\log|\cos 2x|+c$

B. $\frac{1}{2}\log|\sec 2x|+c$

C. $\frac{1}{4}\log|\cos 2x|+c$

D. $\frac{1}{2}\log|\sec 2x|+c$

Answer: B

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215. $\int \frac{\cos 2x - \cos 2\alpha}{\cos x - \cos \alpha} dx$

A. $\sec\alpha \sin x - 2\cos\alpha \log|\sec x + \tan x| + c$

B. $\sec\alpha \sin x + 2\cos\alpha \log|\sec x + \tan x| + c$

C. $\cos\alpha \sin x - 2\cos\alpha \log|\sec x + \tan x| + c$

D. $\cos\alpha \sin x + 2\cos\alpha \log|\sec x + \tan x| + c$

Answer: A

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216. $\int \frac{dx}{4\cos^3 2x - 3\cos 2x} dx =$

A. $\frac{1}{3}\log|\sec 6x + \tan 6x| + c$

B. $\frac{1}{6}\log|\sec 6x + \tan 6x| + c$

C. $3\log|\sec 6x + \tan 6x| + c$

D. $6\log|\sec 6x + \tan 6x| + c$

Answer: B

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217. $\int \frac{\cos 2x}{(\sin x + \cos x)^2} dx$ is equal to

A. $-\log\left|\sec\left(\frac{\pi}{4} + x\right)\right| + c$

B. $\log\left|\sec\left(\frac{\pi}{4} + x\right)\right| + c$

C. $-\log\left|\sec\left(\frac{\pi}{4} - x\right)\right| + c$

D. $\log\left|\sec\left(\frac{\pi}{4} - x\right)\right| + c$

Answer: C

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218. $\int \frac{dx}{\sin x \cos^2 x}$

A. $\sec x - \log|\operatorname{cosec} x - \cot x| + c$

B. $\sec x + \log|\operatorname{cosec} x - \cot x| + c$

C. $-\operatorname{cosec} x - \log|\operatorname{cosec} x - \cot x| + c$

D. $-\operatorname{cosec} x + \log|\operatorname{cosec} x - \cot x| + c$

Answer: B

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219. $\int \{1 + 2\tan x(\tan x + \sec x)\}^{1/2} dx$ is equal to

A. $\log|\sec x + \tan x| - \log|\sec x| + c$

B. $\log|\sec x + \tan x| + \log|\sec x| + c$

C. $\log|\sec x + \tan x| - 2\log|\sec x| + c$

D. $\log|\sec x + \tan x| + 2\log|\sec x| + c$

Answer: B

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220. Evaluate: $\int\sqrt{1+2\cot x(\cot x+\operatorname{cosec} x)}dx$

A. $\log|1-\cos x|+c$

B. $-\log|1-\cos x|+c$

C. $\log|1+\cos x|+c$

D. $-\log|1+\cos x|+c$

Answer: A

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221. If

$\int\tan(x-\alpha)\tan(x+\alpha)\cdot\tan 2x dx = p\log|\sec 2x|+q\log|\sec(x+\alpha)|+r\log|\sec(x-\alpha)|+c$

then p+q+r= . . ..

A. $\frac{1}{2}\log|\sec 2x|-\log|\sec(x-\alpha)|-\log|\sec(x+\alpha)|+c$

B. $\frac{1}{2}\log|\sec 2x|-\log|\sec(x-\alpha)|+\log|\sec(x+\alpha)|+c$

C. $\frac{1}{2}\log|\sec 2x| + \log|\sec(x - \alpha)| - \log|\sec(x + \alpha)| + c$

D. $\frac{1}{2}\log|\sec 2x| + \log|\sec(x - \alpha)| + \log|\sec(x + \alpha)| + c$

Answer: A

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222. $\int \tan 2x \tan 3x \tan 5x dx =$

A. $\frac{1}{5}\log|\sec 5x| + \frac{1}{3}\log|\sec 3x| + \frac{1}{2}\log|\sec 2x| + c$

B. $\frac{1}{5}\log|\sec 5x| + \frac{1}{3}\log|\sec 3x| - \frac{1}{2}\log|\sec 2x| + c$

C. $\frac{1}{5}\log|\sec 5x| - \frac{1}{3}\log|\sec 3x| + \frac{1}{2}\log|\sec 2x| + c$

D. $\frac{1}{5}\log|\sec 5x| - \frac{1}{3}\log|\sec 3x| - \frac{1}{2}\log|\sec 2x| + c$

Answer: D

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223. Evaluate: $\int \frac{\sin 2x}{\sin 5x \sin 3x} dx$

A. $\frac{1}{3}\log|\sin 3x| - \frac{1}{5}\log|\sin 5x| + c$

B. $\frac{1}{3}\log|\sin 3x| + \frac{1}{5}\log|\sin 5x| + c$

C. $3\log|\sin 3x| - 5\log|\sin 5x| + c$

D. $3\log|\sin 3x| + 5\log|\sin 5x| + c$

Answer: A

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224. $\int \frac{\sin(2x)}{\sin\left(x + \frac{\pi}{6}\right)\sin\left(x - \frac{\pi}{6}\right)} dx$

A. $\log\left|\cos\left(x + \frac{\pi}{6}\right)\right| - \log\left|\cos\left(x - \frac{\pi}{6}\right)\right| + c$

B. $\log\left|\cos\left(x + \frac{\pi}{6}\right)\right| + \log\left|\cos\left(x - \frac{\pi}{6}\right)\right| + c$

C. $\log\left|\sin\left(x + \frac{\pi}{6}\right)\right| - \log\left|\sin\left(x - \frac{\pi}{6}\right)\right| + c$

D. $\log\left|\sin\left(x+\frac{\pi}{6}\right)\right|+\log\left|\sin\left(x-\frac{\pi}{6}\right)\right|+c$

Answer: D

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225. If $\int\frac{\sin x}{\cos(x-a)}dx = kx + n.\log[\sec(x-a)] + p$, then $(k, n) \equiv$

A. $x\cos a - (\sin a)\log|\cos(x-a)| + c$

B. $x\cos a + (\sin a)\log|\cos(x-a)| + c$

C. $x\sin a - (\cos a)\log|\cos(x-a)| + c$

D. $x\sin a + (\cos a)\log|\cos(x-a)| + c$

Answer: C

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226. Evaluate the following integrals:

$$\int \frac{\cos x}{\cos(x+\alpha)} dx$$

A. $x\sin a + (\cos a)\log|\cos(x+a)| + c$

B. $x\sin a - (\cos a)\log|\cos(x+a)| + c$

C. $x\cos a + (\sin a)\log|\cos(x+a)| + c$

D. $x\cos a - (\sin a)\log|\cos(x+a)| + c$

Answer: D

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227. $\int \frac{\sin x}{\sin(c-\alpha)} dx = ?$

A. $x\sin a + (\cos a)\log|\cos(x-a)| + c$

B. $x\sin a - (\cos a)\log|\cos(x-a)| + c$

C. $x\cos a + (\sin a)\log|\cos(x-a)| + c$

D. $x\cos a - (\sin a)\log|\cos(x - a)| + c$

Answer: C

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228. $\int \frac{\cos(x - a)}{\sin(x + a)} dx =$

A. $x\cos 2a + (\sin 2a)\log|\sin(x + a)| + c$

B. $x\cos 2a - (\sin 2a)\log|\sin(x + a)| + c$

C. $x\sin 2a + (\cos 2a)\log|\sin(x + a)| + c$

D. $x\sin 2a - (\cos 2a)\log|\sin(x + a)| + c$

Answer: C

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229. Evaluate : $\int \frac{\sin(x - a)}{\sin(x + a)} dx$

A. $x\cos 2a + (\sin 2a)\log|\sin(x + a)| + c$

B. $x\cos 2a - (\sin 2a)\log|\sin(x + a)| + c$

C. $x\sin 2a + (\cos 2a)\log|\sin(x + a)| + c$

D. $x\sin 2a - (\cos 2a)\log|\sin(x + a)| + c$

Answer: B

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230. $\int \frac{\cos(x - a)}{\sin(x + b)} dx =$

A. $x\sin(a - b) - \cos(a - b)\log|\sin(x + b)| + c$

B. $x\sin(a - b) + \cos(a - b)\log|\sin(x + b)| + c$

C. $x\sin(a + b) - \cos(a + b)\log|\sin(x + b)| + c$

D. $x\sin(a + b) + \cos(a + b)\log|\sin(x + b)| + c$

Answer: D

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231. $\int \frac{\sin(x+a)}{\cos(x-b)}dx =$

A. $x\sin(a+b) + \cos(a+b)\log|\sec(x-b)| + c$

B. $x\sin(a-b) + \cos(a-b)\log|\sec(x-b)| + c$

C. $x\sin(a-b) - \cos(a-b)\log|\sec(x-b)| + c$

D. $x\sin(a+b) - \cos(a+b)\log|\sec(x-b)| + c$

Answer: A

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232. $\int \frac{\sin(x+a)}{\cos(x-a)}dx =$

A. $x\sin 2a + (\cos 2a)\log|\cos(x-a)| + c$

B. $x\sin 2a - (\cos 2a)\log|\cos(x-a)| + c$

C. $x\cos 2a + (\sin 2a)\log|\cos(x-a)| + c$

D. $x\cos 2a - (\sin 2a)\log|\cos(x - a)| + c$

Answer: B

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233. $\int \frac{\sin(x + a) - \sin(x - a)}{\sin(x + a) + \sin(x - a)} dx =$

A. $(\cot a)\log|\sec x| + c$

B. $(\cot a)\log|\sin x| + c$

C. $(\tan a)\log|\sin x| + c$

D. $(\tan a)\log|\sec x| + c$

Answer: C

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234. $\int \frac{\sin x + \cos x}{\sin(x + \alpha)} dx =$

A. $x(\cos\alpha - \sin\alpha) + (\cos\alpha + \sin\alpha)\log|\sin(x - \alpha)| + c$

B. $x(\cos\alpha + \sin\alpha) + (\cos\alpha - \sin\alpha)\log|\sin(x - \alpha)| + c$

C. $x(\cos\alpha + \sin\alpha) + (\cos\alpha - \sin\alpha)\log|\sin(x + \alpha)| + c$

D. $x(\cos\alpha + \sin\alpha) - (\cos\alpha - \sin\alpha)\log|\sin(x + \alpha)| + c$

Answer: C

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235. $\int \frac{dx}{\sin(x - a)\sin(x - b)}$

A. $\frac{1}{\sin(b - a)}\log\left|\frac{\sin(x - b)}{\sin(x - a)}\right| + c$

B. $\frac{1}{\sin(b - a)}\log\left|\frac{\sin(x - a)}{\sin(x - b)}\right| + c$

C. $\frac{1}{\cos(b - a)}\log\left|\frac{\sin(x - b)}{\sin(x - a)}\right| + c$

D. $\frac{1}{\cos(b - a)}\log\left|\frac{\sin(x - a)}{\sin(x - b)}\right| + c$

Answer: A

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236. $\int \frac{dx}{\sin(x+a)\sin(x+b)} =$

A. $\frac{1}{\cos(b-a)}\log\left|\frac{\sin(x+a)}{\sin(x+b)}\right| + c$

B. $\frac{1}{\cos(b-a)}\log\left|\frac{\sin(x+b)}{\sin(x+a)}\right| + c$

C. $\frac{1}{\sin(b-a)}\log\left|\frac{\sin(x+b)}{\sin(x+a)}\right| + c$

D. $\frac{1}{\sin(b-a)}\log\left|\frac{\sin(x+a)}{\sin(x+b)}\right| + c$

Answer: C

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237. Evaluate: $\int \frac{1}{\cos(x-a)\cos(x-b)}\,dx$

A. $\frac{1}{\cos(b-a)}\log\left|\frac{\cos(x-b)}{\cos(x-a)}\right| + c$

B. $\frac{1}{\cos(b-a)}\log\left|\frac{\cos(x-a)}{\cos(x-b)}\right| + c$

C. $\frac{1}{\sin(b-a)}\log\left|\frac{\cos(x-b)}{\cos(x-a)}\right|+c$

D. $\frac{1}{\sin(b-a)}\log\left|\frac{\cos(x-a)}{\cos(x-b)}\right|+c$

Answer: C

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238. Evaluate: (i) $\int\frac{\cos 2x+x+1}{x^2+\sin 2x+2x}dx$ (ii) $\int\frac{1}{\cos(x+a)\cos(x+b)}dx$

A. $\frac{1}{\sin(b-a)}\log\left|\frac{\cos(x+b)}{\cos(x+a)}\right|+c$

B. $\frac{1}{\sin(b-a)}\log\left|\frac{\cos(x+a)}{\cos(x+b)}\right|+c$

C. $\frac{1}{\cos(b-a)}\log\left|\frac{\cos(x+b)}{\cos(x+a)}\right|+c$

D. $\frac{1}{\cos(b-a)}\log\left|\frac{\cos(x+a)}{\cos(x+b)}\right|+c$

Answer: B

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239. $\int \frac{dx}{\cos(x-a)\sin(x-b)} =$

A. $\frac{1}{\cos(b-a)}\log\left|\frac{\cos(x-a)}{\sin(x-b)}\right| + c$

B. $\frac{1}{\cos(b-a)}\log\left|\frac{\sin(x-b)}{\cos(x-a)}\right| + c$

C. $\frac{1}{\sin(b-a)}\log\left|\frac{\cos(x-a)}{\sin(x-b)}\right| + c$

D. $\frac{1}{\sin(b-a)}\log\left|\frac{\sin(x-b)}{\cos(x-a)}\right| + c$

Answer: B

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240. $\int \frac{1}{\sin(x-a)\cos(x-b)}dx =$

A. $\frac{1}{\sin(b-a)}\log\left|\frac{\cos(x-b)}{\sin(x-a)}\right| + c$

B. $\frac{1}{\sin(b-a)}\log\left|\frac{\sin(x-a)}{\cos(x-b)}\right| + c$

C. $\frac{1}{\cos(b-a)}\log\left|\frac{\cos(x-b)}{\sin(x-a)}\right| + c$

D. $\frac{1}{\cos(b - a)}\log\left|\frac{\sin(x - a)}{\cos(x - b)}\right| + c$

Answer: D

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241. $\int \frac{1}{1 + \tan x}dx$

A. $\frac{1}{2}(x + \log|\sin x + \cos x|) + c$

B. $\frac{1}{2}(x - \log|\sin x + \cos x|) + c$

C. $x + \log|\sin x + \cos x| + c$

D. $x - \log|\sin x + \cos x| + c$

Answer: A

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242. $\int \frac{dx}{(1 - \cot x)} = ?$

A. $\frac{-1}{2}(x + \log|\sin x - \cos x|) + c$

B. $\frac{-1}{2}(x - \log|\sin x + \cos x|) + c$

C. $\frac{1}{2}(x + \log|\sin x - \cos x|) + c$

D. $\frac{1}{2}(x - \log|\sin x + \cos x|) + c$

Answer: C

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243. $\frac{1}{2 + 3\tan x}$

A. $\frac{1}{13}(2x + 3\log|2\cos x + 3\sin x|) + c$

B. $\frac{1}{13}(2x - 3\log|2\cos x + 3\sin x|) + c$

C. $\frac{1}{13}(x + 3\log|2\cos x + 3\sin x|) + c$

D. $\frac{1}{13}(x - 3\log|2\cos x + 3\sin x|) + c$

Answer: A

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244. $\int \frac{\sin x + \cos x}{3\sin x + 4\cos x} dx =$

A. $\frac{1}{25}(11x + 2\log|3\sin x + 4\cos x|) + c$

B. $\frac{1}{25}(11x - 2\log|3\sin x + 4\cos x|) + c$

C. $\frac{1}{25}(11x + \log|3\sin x + 4\cos x|) + c$

D. $\frac{1}{25}(11x - \log|3\sin x + 4\cos x|) + c$

Answer: A

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245. Evaluate: $\int \frac{2\sin x + 3\cos x}{3\sin x + 4\cos x} dx$

A. $\frac{1}{5}(18x + \log|3\sin x + 4\cos x|) + c$

B. $\frac{1}{25}(18x + \log|3\sin x + 4\cos x|) + c$

C. $\frac{1}{5}(18x - \log|3\sin x + 4\cos x|) + c$

D. $\frac{1}{25}(18x - \log|3\sin x + 4\cos x|) + c$

Answer: B

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246. $\int \frac{4\sin x - 38\cos x}{5\sin x - 11\cos x} dx =$

A. $3x + \log|5\sin x - 11\cos x| + c$

B. $3x - \log|5\sin x - 11\cos x| + c$

C. $x + \log|5\sin x - 11\cos x| + c$

D. $x - \log|5\sin x - 11\cos x| + c$

Answer: B

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247. $\int \frac{3e^x + 4}{2e^x - 8} dx =$

A. $\frac{x}{2} + 2\log\left|2e^x - 8\right| + c$

B. $\frac{-x}{2} + 2\log\left|2e^x - 8\right| + c$

C. $2x + \frac{1}{2}\log\left|2e^x - 8\right| + c$

D. $-2x + \frac{1}{2}\log\left|2e^x - 8\right| + c$

Answer: B

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248. $\int \frac{4e^x + 4}{2e^x - 8} dx =$

A. $A = 5, B = 3$

B. $A = 5, B = -3$

C. $A = -5, B = 3$

D. $A = -5, B = -3$

Answer: B

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249. $\int \frac{3e^{2x} + 5}{4e^{2x} - 5} dx =$

A. $\frac{7}{4}\log\left|4e^{2x} - 5\right| - x + c$

B. $\frac{7}{8}\log\left|4e^{2x} - 5\right| - x + c$

C. $\frac{7}{4}\log\left|4e^{2x} - 5\right| + x + c$

D. $\frac{7}{8}\log\left|4e^{2x} - 5\right| + x + c$

Answer: B

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250. $\int \frac{20 - 12e^{x}}{3e^{x} - 4} dx =$

A. $-5x + \log\left|3e^{x} - 4\right| + c$

B. $5x - \log\left|3e^{x} - 4\right| + c$

C. $5x + \log\left|3e^{x} - 4\right| + c$

D. $-5x - \log\left|3e^x - 4\right| + c$

Answer: A

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251. $\int \frac{dx}{\sqrt{x} + \sqrt[3]{x}}$

A. $2\sqrt{x} - 3\sqrt[3]{x} + 6\sqrt[6]{x} - 6\log\left|\sqrt[6]{x} + 1\right| + c$

B. $2\sqrt{x} + 3\sqrt[3]{x} + 6\sqrt[6]{x} + 6\log\left|\sqrt[6]{x} + 1\right| + c$

C. $2\sqrt{x} - 3\sqrt[3]{x} - 6\sqrt[6]{x} + 6\log\left|\sqrt[6]{x} + 1\right| + c$

D. $2\sqrt{x} + 3\sqrt[3]{x} - 6\sqrt[6]{x} - 6\log\left|\sqrt[6]{x} + 1\right| + c$

Answer: A

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252. $\int \frac{\sqrt{x}}{\sqrt{x}+\sqrt[3]{x}}dx =$

A. $x - \frac{6}{5}\sqrt[6]{x^5} + \frac{3}{2}\sqrt[3]{x^2} - 2\sqrt{x} + 3\sqrt[3]{x} - 6\sqrt[6]{x} + 6\log\left|\sqrt[6]{x}+1\right| + c$

B. $x - \frac{6}{5}\sqrt[6]{x^5} + \frac{3}{2}\sqrt[3]{x^2} - 2\sqrt{x} + 3\sqrt[3]{x} - 6\sqrt[6]{x} - 6\log\left|\sqrt[6]{x}+1\right| + c$

C. $x + \frac{6}{5}\sqrt[6]{x^5} + \frac{3}{2}\sqrt[3]{x^2} + 2\sqrt{x} + 3\sqrt[3]{x} - 6\sqrt[6]{x} + 6\log\left|\sqrt[6]{x}+1\right| + c$

D. $x + \frac{6}{5}\sqrt[6]{x^5} + \frac{3}{2}\sqrt[3]{x^2} + 2\sqrt{x} + 3\sqrt[3]{x} - 6\sqrt[6]{x} - 6\log\left|\sqrt[6]{x}+1\right| + c$

Answer: A

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253. $\int \frac{\sqrt{x}}{1+\sqrt[4]{x^3}}dx =$

A. $\frac{2}{3}\left(\sqrt[4]{x^3} - \log\left|\sqrt[4]{x^3}+1\right|\right) + c$

B. $\frac{2}{3}\left(\sqrt[4]{x^3} + \log\left|\sqrt[4]{x^3}+1\right|\right) + c$

C. $\frac{4}{3}\left(\sqrt[4]{x^3} - \log\left|\sqrt[4]{x^3} + 1\right|\right) + c$

D. $\frac{4}{3}\left(\sqrt[4]{x^3} + \log\left|\sqrt[4]{x^3} + 1\right|\right) + c$

Answer: C

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254. $\int \frac{dx}{\sqrt{x+2} + \sqrt[6]{x+2}} =$

A. $2\sqrt{x+2} + 6\sqrt[6]{x+2} + 6\tan^{-1}\left(\sqrt[6]{x+2}\right) + c$

B. $2\sqrt{x+2} + 6\sqrt[6]{x+2} - 6\tan^{-1}\left(\sqrt[6]{x+2}\right) + c$

C. $2\sqrt{x+2} - 6\sqrt[6]{x+2} + 6\tan^{-1}\left(\sqrt[6]{x+2}\right) + c$

D. $2\sqrt{x+2} - 6\sqrt[6]{x+2} - 6\tan^{-1}\left(\sqrt[6]{x+2}\right) + c$

Answer: C

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255. $\int \frac{dx}{(3x+2]^{\frac{2}{3}} + (3x+2)^{\frac{4}{5}}} =$

A. $\frac{5}{3}\sqrt[5]{3x+2} + 5\sqrt[15]{3x+2} + 5\tan^{-1}\sqrt[15]{3x+2} + c$

B. $\frac{5}{3}\sqrt[5]{3x+2} + 5\sqrt[15]{3x+2} - 5\tan^{-1}\sqrt[15]{3x+2} + c$

C. $\frac{5}{3}\sqrt[5]{3x+2} - 5\sqrt[15]{3x+2} + 5\tan^{-1}\sqrt[15]{3x+2} + c$

D. $\frac{5}{3}\sqrt[5]{3x+2} - 5\sqrt[15]{3x+2} - 5\tan^{-1}\sqrt[15]{3x+2} + c$

Answer: C

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256. $\int \frac{dx}{x^2+8} =$

A. $\frac{1}{2}\tan^{-1}\left(\frac{x}{2}\right) + c$

B. $\sqrt{2}\tan^{-1}\left(\sqrt{2x}\right) + c$

C. $\frac{1}{2\sqrt{2}}\tan^{-1}\left(\frac{x}{2\sqrt{2}}\right) + c$

D. $\frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{x}{\sqrt{2}}\right)+c$

Answer: C

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257. $\int\frac{dx}{\alpha^2x^2+\beta^2}=$

A. $\frac{1}{\alpha\beta}\tan^{-1}\left(\frac{\alpha x}{\beta}\right)+c$

B. $\frac{1}{\alpha\beta}\tan^{-1}\left(\frac{\beta x}{\alpha}\right)+c$

C. $\frac{\alpha}{\beta}\tan^{-1}\left(\frac{\alpha x}{\beta}\right)+c$

D. $\frac{\beta}{\alpha}\tan^{-1}\left(\frac{\beta x}{\alpha}\right)+c$

Answer: A

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258. $\int \frac{dx}{5x^2+7} =$

A. $\frac{1}{\sqrt{35}}\tan^{-1}\left(\frac{\sqrt{5x}}{\sqrt{7}}\right)+c$

B. $\frac{1}{5\sqrt{7}}\tan^{-1}\left(\frac{\sqrt{5x}}{\sqrt{7}}\right)+c$

C. $\left(\frac{\sqrt{5}}{\sqrt{7}}\right)\tan^{-1}\left(\frac{\sqrt{5x}}{\sqrt{7}}\right)+c$

D. $\frac{5}{\sqrt{7}}\tan^{-1}\left(\frac{\sqrt{5x}}{\sqrt{7}}\right)+c$

Answer: A

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259. $\int \frac{1}{16x^2+9}dx$ is equal to

A. $\frac{1}{3}\tan^{-1}\left(\frac{4x}{3}\right)+c$

B. $\frac{1}{12}\tan^{-1}\left(\frac{4x}{3}\right)+c$

C. $\frac{1}{4}\tan^{-1}\left(\frac{4x}{3}\right)+c$

D. $\frac{4}{3}\tan^{-1}\left(\frac{4x}{3}\right)+c$

Answer: B

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260. $\int \frac{\sqrt{x}}{1+x}dx =$

A. $2\sqrt{x}+2\tan^{-1}\sqrt{x}+c$

B. $2\sqrt{x}-2\tan^{-1}\sqrt{x}+c$

C. $\sqrt{x}-\tan^{-1}\sqrt{x}+c$

D. $\sqrt{1+x}+c$

Answer: B

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261. $\int \frac{\sin x}{1+\cos^2 x} dx =$

A. $2\cot^{-1}(\cos x) + c$

B. $2\tan^{-1}(\cos x) + c$

C. $\cot^{-1}(\cos x) + c$

D. $\tan^{-1}(\cos x) + c$

Answer: C

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262. $\int \frac{dx}{\sin^2 x + \cos^2 x + 5} =$

A. $\frac{1}{3}\cot^{-1}(\tan x) + c$

B. $\frac{1}{3}\tan^{-1}(\tan x) + c$

C. $\frac{1}{6}\cot^{-1}(\tan x) + c$

D. $\frac{1}{6}\tan^{-1}(\tan x) + c$

Answer: D

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263. $\int \frac{dx}{\sqrt{1-x^2}\left(9+\left(\sin^{-1}x\right)^2\right)} =$

A. $3\tan^{-1}\left(\frac{\sin^{-1}x}{3}\right)+c$

B. $3\cot^{-1}\left(\frac{\sin^{-1}x}{3}\right)+c$

C. $\frac{1}{3}\tan^{-1}\left(\frac{\sin^{-1}x}{3}\right)+c$

D. $\frac{1}{3}\cot^{-1}\left(\frac{\sin^{-1}x}{3}\right)+c$

Answer: C

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264. $\int \frac{dx}{e^{3x}+e^{-3x}} =$

A. $\frac{1}{3}\tan^{-1}e^{-3x}+c$

B. $\frac{1}{3}\tan^{-1}e^{3x}+c$

C. $3\tan^{-1}e^{-3x}+c$

D. $\tan^{-1}e^{3x}+c$

Answer: B

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265. $\frac{1}{ae^{x}+be^{-x}}$

A. $\frac{1}{\sqrt{ab}}\tan^{-1}\left(\sqrt{\frac{b}{a}}e^{x}\right)+c$

B. $\frac{1}{\sqrt{ab}}\tan^{-1}\left(\sqrt{\frac{a}{b}}e^{x}\right)+c$

C. $\frac{1}{\sqrt{ab}}\tan^{-1}\left(\sqrt{\frac{be^{x}}{a}}\right)+c$

D. $\frac{1}{\sqrt{ab}}\tan^{-1}\left(\sqrt{\frac{ae^x}{b}}\right)+c$

Answer: B

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266. $\int \frac{dx}{a^2e^x+b^2e^{-x}} =$

A. $\frac{1}{a}\tan^{-1}\left(\frac{ae^x}{b}\right)+c$

B. $\frac{1}{b}\tan^{-1}\left(\frac{ae^x}{b}\right)+c$

C. $\frac{1}{ab}\tan^{-1}\left(\frac{be^x}{a}\right)+c$

D. $\frac{1}{ab}\tan^{-1}\left(\frac{ae^x}{b}\right)+c$

Answer: D

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267. $\int \frac{dx}{\left(4x^2 - 1\right)} = ?$

A. $\frac{1}{2}\log\left|\frac{2x - 1}{2x + 1}\right| + c$

B. $\frac{1}{2}\log\left|\frac{2x + 1}{2x - 1}\right| + c$

C. $\frac{1}{4}\log\left|\frac{2x - 1}{2x + 1}\right| + c$

D. $\frac{1}{4}\log\left|\frac{2x + 1}{2x - 1}\right| + c$

Answer: C

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268. $\int \frac{dx}{9x^2 - 8} =$

A. $\frac{1}{12\sqrt{2}}\log\left|\frac{3x - 2\sqrt{2}}{3x + 2\sqrt{2}}\right| + c$

B. $\frac{1}{12\sqrt{2}}\log\left|\frac{3x + 2\sqrt{2}}{3x - 2\sqrt{2}}\right| + c$

C. $\frac{1}{6\sqrt{2}}\log\left|\frac{3x - 2\sqrt{2}}{3x + 2\sqrt{2}}\right| + c$

D. $\frac{1}{6\sqrt{2}}\log\left|\frac{3x + 2\sqrt{2}}{3x - 2\sqrt{2}}\right| + c$

Answer: A

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269. $\int \frac{x^3}{16x^8 - 25} dx =$

A. $\frac{1}{320}\log\left|\frac{4x^4 - 5}{4x^4 + 5}\right| + c$

B. $\frac{1}{320}\log\left|\frac{4x^4 + 5}{4x^4 - 5}\right| + c$

C. $\frac{1}{160}\log\left|\frac{4x^4 - 5}{4x^4 + 5}\right| + c$

D. $\frac{1}{160}\log\left|\frac{4x^4 + 5}{4x^4 - 5}\right| + c$

Answer: C

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270. $\int \frac{dx}{a^2 - b^2x^2} =$

A. $\frac{1}{ab}\log\left|\frac{a - bx}{a + bx}\right| + c$

B. $\frac{1}{ab}\log\left|\frac{a + bx}{a - bx}\right| + c$

C. $\frac{1}{2ab}\log\left|\frac{a - bx}{a + bx}\right| + c$

D. $\frac{1}{2ab}\log\left|\frac{a + bx}{a - bx}\right| + c$

Answer: D

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271. $\int \frac{dx}{8 - 7x^2} =$

A. $\frac{1}{4\sqrt{14}}\log\left|\frac{2\sqrt{2} + \sqrt{7}x}{2\sqrt{2} - \sqrt{7}x}\right| + c$

B. $\frac{1}{4\sqrt{14}}\log\left|\frac{2\sqrt{2} - \sqrt{7}x}{2\sqrt{2} + \sqrt{7}x}\right| + c$

C. $\frac{1}{4\sqrt{7}}\log\left|\frac{2\sqrt{2}+\sqrt{7}x}{2\sqrt{2}-\sqrt{7}x}\right|+c$

D. $\frac{1}{4\sqrt{7}}\log\left|\frac{2\sqrt{2}+\sqrt{7}x}{2\sqrt{2}-\sqrt{7}x}\right|+c$

Answer: A

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272. $\int\frac{\sec x\tan x}{9-16\tan^2 x}dx=$

A. $\frac{1}{20}\log\left|\frac{5-4\sec x}{5+4\sec x}\right|+c$

B. $\frac{1}{20}\log\left|\frac{5+4\sec x}{5-4\sec x}\right|+c$

C. $\frac{1}{40}\log\left|\frac{5-4\sec x}{5+4\sec x}\right|+c$

D. $\frac{1}{40}\log\left|\frac{5+4\sec x}{5-4\sec x}\right|+c$

Answer: D

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273. $\int \frac{1+\tan^2 x}{1-\tan^2 x} dx$

A. $\log\left|\frac{1-\tan x}{1+\tan x}\right| + c$

B. $\log\left|\frac{1+\tan x}{1-\tan x}\right| + c$

C. $\frac{1}{2}\log\left|\frac{1-\tan x}{1+\tan x}\right| + c$

D. $\frac{1}{2}\log\left|\frac{1+\tan x}{1-\tan x}\right| + c$

Answer: D

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274. $\int \frac{dx}{\sqrt{a^2 - b^2x^2}} =$

A. $\frac{1}{b}\sin^{-1}\left(\frac{bx}{a}\right) + c$

B. $\frac{1}{b}\sin^{-1}\left(\frac{ax}{b}\right) + c$

C. $\frac{1}{a}\sin^{-1}\left(\frac{bx}{a}\right) + c$

D. $\frac{1}{a}\sin^{-1}\left(\frac{ax}{b}\right)+c$

Answer: A

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275. $\int\left(\frac{1}{\sqrt{9-25x^2}}\right)dx$

A. $\frac{1}{3}\sin^{-1}\left(\frac{3x}{5}\right)+c$

B. $\frac{-1}{3}\sin^{-1}\left(\frac{3x}{5}\right)+c$

C. $\frac{1}{5}\sin^{-1}\left(\frac{5x}{3}\right)+c$

D. $\frac{-1}{5}\sin^{-1}\left(\frac{5x}{3}\right)+c$

Answer: C

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276. If $\int \frac{1}{\sqrt{9 - 16x^2}} dx = \alpha \sin^{-1}(\beta x) + c$, then $\alpha + \frac{1}{\beta} =$

A. 1

B. $\frac{7}{12}$

C. $\frac{19}{12}$

D. $\frac{9}{12}$

Answer: A

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277. Evaluate: $\int \sqrt{\frac{1 - x}{1 + x}} dx$

A. $\sqrt{1 - x^2} + \sin^{-1}x + c$

B. $-\sqrt{1 - x^2} - \sin^{-1}x + c$

C. $-\sqrt{1 - x^2} + \sin^{-1}x + c$

D. $\sqrt{1 - x^2} - \sin^{-1}x + c$

Answer: A

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278. $\int \frac{\sec x}{\sqrt{\cos 2x}} dx =$

A. $\sin^{-1}(\tan x) + c$

B. $\cos^{-1}(\tan x) + c$

C. $\tan x + c$

D. $(\sin x)\left(\sqrt{\cos x}\right) + c$

Answer: A

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279. Evaluate: $\int \frac{\cos x - \sin x}{\sqrt{8 - \sin 2x}} dx$

A. $\sin^{-1}\left(\frac{\sin x + \cos x}{3}\right) + c$

B. $\cos^{-1}\left(\frac{\sin x + \cos x}{3}\right) + c$

C. $\sin^{-1}\left(\frac{\sin x + \cos x}{2\sqrt{2}}\right) + c$

D. $\cos^{-1}\left(\frac{\sin x + \cos x}{2\sqrt{2}}\right) + c$

Answer: A

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280. $\int \sqrt{\sec x + 1}\, dx$

A. $\frac{1}{\sqrt{2}}\sin^{-1}\left(\sqrt{2}\sin\left(\frac{x}{2}\right)\right) + c$

B. $\frac{1}{2}\sin^{-1}\left(\sqrt{2}\sin\left(\frac{x}{2}\right)\right) + c$

C. $\sqrt{2}\sin^{-1}\left(\sqrt{2}\sin\left(\frac{x}{2}\right)\right) + c$

D. $2\sin^{-1}\left(\sqrt{2}\sin\left(\frac{x}{2}\right)\right) + c$

Answer: D

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281. $\int \frac{\sqrt{e^x}}{\sqrt{e^{-x} - e^x}} dx =$

A. $\sin^{-1} e^x + c$

B. $2\sin^{-1} e^x + c$

C. $-\sin^{-1} e^x + c$

D. $-2\sin^{-1} e^x + c$

Answer: A

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282. Evaluate: (i) $\int \frac{a^x}{\sqrt{1 - a^{2x}}} dx$ (ii) $\int \frac{2x}{\sqrt{1 - x^2 - x^4}} dx$

A. $\frac{1}{\log a} \cos^{-1} a^x + c$

B. $\frac{1}{\log a} \sin^{-1} a^x + c$

C. $(\log a)\cos^{-1}a^x + c$

D. $(\log a)\sin^{-1}a^x + c$

Answer: B

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283. $\int \frac{dx}{\sqrt{2x^2 + 25}} =$

A. $\frac{1}{\sqrt{2}}\log\left|x + \sqrt{x^2 + \frac{5}{2}}\right| + c$

B. $\frac{1}{2\sqrt{2}}\log\left|x + \sqrt{x^2 + \frac{5}{2}}\right| + c$

C. $\frac{1}{\sqrt{2}}\log\left|x + \sqrt{x^2 + \frac{25}{2}}\right| + c$

D. $\frac{1}{2\sqrt{2}}\log\left|x + \sqrt{x^2 + \frac{25}{2}}\right| + c$

Answer: C

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284. $\int \frac{dx}{\sqrt{3x^2+8}} =$

A. $\frac{1}{\sqrt{3}}\log\left|x+\sqrt{x^2+\frac{8}{3}}\right|+c$

B. $\frac{1}{\sqrt{3}}\log\left|x-\sqrt{x^2+\frac{8}{3}}\right|+c$

C. $\frac{1}{\sqrt{3}}\log\left|x+\sqrt{3x^2+8}\right|+c$

D. $\frac{1}{\sqrt{3}}\log\left|x-\sqrt{3x^2+8}\right|+c$

Answer: A

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285. $\int \frac{\sec^2 x}{\sqrt{16+\tan^2 x}}dx$

A. $4\log\left|\tan x+\sqrt{4+\tan^2 x}\right|+c$

B. $4\log\left|\tan x+\sqrt{16+\tan^2 x}\right|+c$

C. $\log\left|\tan x + \sqrt{4 + \tan^2 x}\right| + c$

D. $\log\left|\tan x + \sqrt{16 + \tan^2 x}\right| + c$

Answer: D

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286. $\int \frac{e^{x/2}}{\sqrt{a^2 e^x + b^2 e^{-x}}} dx$

A. $\frac{1}{b}\log\left|e^x - \sqrt{e^{2x} + \frac{b^2}{a^2}}\right| + c$

B. $\frac{1}{b}\log\left|e^x + \sqrt{e^{2x} + \frac{b^2}{a^2}}\right| + c$

C. $\frac{1}{a}\log\left|e^x - \sqrt{e^{2x} + \frac{b^2}{a^2}}\right| + c$

D. $\frac{1}{a}\log\left|e^x + \sqrt{e^{2x} + \frac{b^2}{a^2}}\right| + c$

Answer: D

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287. $\int \frac{dx}{\sqrt{3x^2 - 5}}$

A. $\frac{1}{\sqrt{3}}\log\left|x + \sqrt{x^2 - \frac{5}{3}}\right| + c$

B. $\frac{1}{\sqrt{5}}\log\left|x + \sqrt{x^2 - \frac{5}{3}}\right| + c$

C. $\frac{1}{\sqrt{3}}\log\left|\sqrt{3}x + \sqrt{x^2 - \frac{5}{3}}\right| + c$

D. $\frac{1}{\sqrt{5}}\log\left|\sqrt{3}x + \sqrt{x^2 - \frac{5}{3}}\right| + c$

Answer: A

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288. $\int \frac{dx}{\sqrt{4x^2 - 5}} =$

A. $\frac{1}{4}\log\left|x+\sqrt{x^2-\frac{5}{4}}\right|+c$

B. $\frac{1}{2}\log\left|x+\sqrt{x^2-\frac{5}{4}}\right|+c$

C. $\frac{1}{4}\log\left|x+\sqrt{x^2-5}\right|+c$

D. $\frac{1}{2}\log\left|x+\sqrt{x^2-5}\right|+c$

Answer: B

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289. $\int \frac{1}{x^{\frac{2}{3}}\sqrt{x^{\frac{2}{3}}-4}}dx =$

A. $-3\log\left|\sqrt[3]{x}+\sqrt{\sqrt[3]{x^2}-4}\right|+c$

B. $3\log\left|\sqrt[3]{x}+\sqrt{\sqrt[3]{x^2}-4}\right|+c$

C. $\frac{-1}{3}\log\left|\sqrt[3]{x}+\sqrt{\sqrt[3]{x^2}-4}\right|+c$

D. $\frac{1}{3}\log\left|\sqrt[3]{x}+\sqrt{\sqrt[3]{x^2}-4}\right|+c$

Answer: B

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290. $\int\frac{\sin x-\cos x}{\sqrt{\sin 2x-\frac{1}{2}}}dx=$

A. $\log\left|\sin x+\cos x+\sqrt{(\sin x+\cos x)^2-\frac{3}{2}}\right|+c$

B. $-\log\left|\sin x+\cos x+\sqrt{(\sin x+\cos x)^2-\frac{3}{2}}\right|+c$

C. $\log\left|\sin x+\cos x+\sqrt{(\sin x+\cos x)^2-\frac{1}{2}}\right|+c$

D. $-\log\left|\sin x+\cos x+\sqrt{(\sin x+\cos x)^2-\frac{1}{2}}\right|+c$

Answer: B

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291. $\int \frac{dx}{\sqrt{\left(a^2+x^2\right)^3}} =$

A. $\frac{x}{a^2\sqrt{a^2+x^2}}+c$

B. $\frac{1}{a^2\sqrt{a^2+x^2}}+c$

C. $\frac{x}{a\sqrt{a^2+x^2}}+c$

D. $\frac{1}{a\sqrt{a^2+x^2}}+c$

Answer: A

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292. $\int \frac{dx}{x^2\sqrt{a^2+x^2}} =$

A. $\frac{-1}{ax}\sqrt{a^2+x^2}+c$

B. $\frac{1}{ax}\sqrt{a^2+x^2}+c$

C. $\frac{-1}{a^2x}\sqrt{a^2+x^2}+c$

D. $\frac{1}{a^2 x}\sqrt{a^2 + x^2} + c$

Answer: C

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293. $\int \frac{dx}{\left(x^2 - 1\right)\sqrt{x^2 + 1}} =$

A. $\frac{1}{2\sqrt{2}}\log\left|\frac{\sqrt{1 + x^2} + \sqrt{2}x}{\sqrt{1 + x^2} - \sqrt{2}x}\right| + c$

B. $\frac{1}{2\sqrt{2}}\log\left|\frac{\sqrt{1 + x^2} + \sqrt{2}}{\sqrt{1 + x^2} - \sqrt{2}}\right| + c$

C. $\frac{1}{2\sqrt{2}}\log\left|\frac{-\sqrt{1 + x^2} + \sqrt{2}x}{\sqrt{1 + x^2} + \sqrt{2}x}\right| + c$

D. $\frac{1}{2\sqrt{2}}\log\left|\frac{\sqrt{1 + x^2} - \sqrt{2}x}{\sqrt{1 + x^2} + \sqrt{2}x}\right| + c$

Answer: C

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294. Let $f(x) = \int \frac{x^2}{\left(1+x^2\right)\left(1+\sqrt{1+x^2}\right)} dx$ and $f(0) = 0$ then $f(1)$ is

A. $\log\left(1+\sqrt{2}\right)$

B. $\log\left(1-\sqrt{2}\right)$

C. $\log\left(1+\sqrt{2}\right) - \frac{\pi}{4}$

D. $\log\left(1+\sqrt{2}\right) + \frac{\pi}{4}$

Answer: C

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295. $\int \frac{dx}{\sqrt{\left(a^2-x^2\right)^3}}$.

A. $\frac{-x}{a\sqrt{a^2-x^2}} + c$

B. $\frac{x}{a\sqrt{a^2-x^2}} + c$

C. $\frac{-x}{a^2\sqrt{a^2 - x^2}} + c$

D. $\frac{x}{a^2\sqrt{a^2 - x^2}} + c$

Answer: D

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296. $\int \frac{\sqrt{a^2 - x^2}}{x^2} dx$

A. $\frac{1}{x}\sqrt{a^2 - x^2} + \sin^{-1}\left(\frac{x}{a}\right) + c$

B. $\frac{1}{x}\sqrt{a^2 - x^2} - \sin^{-1}\left(\frac{x}{a}\right) + c$

C. $\frac{-1}{x}\sqrt{a^2 - x^2} - \sin^{-1}\left(\frac{x}{a}\right) + c$

D. $\frac{-1}{x}\sqrt{a^2 - x^2} + \sin^{-1}\left(\frac{x}{a}\right) + c$

Answer: C

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297. $\int \frac{x^2}{\sqrt{\left(a^2 - x^2\right)^3}} dx =$

A. $\frac{1}{\sqrt{a^2 - x^2}} + \sin^{-1}\left(\frac{x}{a}\right) + c$

B. $\frac{1}{\sqrt{a^2 - x^2}} - \sin^{-1}\left(\frac{x}{a}\right) + c$

C. $\frac{x}{\sqrt{a^2 - x^2}} + \sin^{-1}\left(\frac{x}{a}\right) + c$

D. $\frac{x}{\sqrt{a^2 - x^2}} - \sin^{-1}\left(\frac{x}{a}\right) + c$

Answer: D

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298. $\int \sqrt{\frac{x}{a^3 - x^3}}$ dx is equal to

A. $\sin^{-1}\left(\frac{x}{a}\right)^{\frac{3}{2}} + c$

B. $\frac{2}{3}\sin^{-1}\left(\frac{x}{a}\right)^{\frac{3}{2}} + c$

C. $\frac{3}{2}\sin^{-1}\left(\frac{x}{a}\right)^{\frac{3}{2}}+c$

D. $\frac{3}{2}\sin^{-1}\left(\frac{x}{a}\right)^{\frac{2}{3}}+c$

Answer: B

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299. $\int \frac{\sqrt{x^2-a^2}}{x}dx$

A. $\sqrt{x^2-a^2}+\frac{1}{a}\sec^{-1}\left(\frac{x}{a}\right)+c$

B. $\sqrt{x^2-a^2}-\frac{1}{a}\sec^{-1}\left(\frac{x}{a}\right)+c$

C. $\sqrt{x^2-a^2}+a\sec^{-1}\left(\frac{x}{a}\right)+c$

D. $\sqrt{x^2-a^2}-a\sec^{-1}\left(\frac{x}{a}\right)+c$

Answer: D

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300. $\int \frac{dx}{x^2\sqrt{x^2 - 1}} =$

A. $\frac{-1}{x}\sqrt{x^2 - 1} + c$

B. $\frac{1}{x}\sqrt{x^2 - 1} + c$

C. $\frac{-x}{\sqrt{x^2 - 1}} + c$

D. $\frac{x}{\sqrt{x^2 - 1}} + c$

Answer: B

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301. $\int \sqrt{\frac{a - x}{x}} dx =$

A. $a\sin^{-1}\left(\frac{x}{a}\right) - \sqrt{x(a - x)} + c$

B. $a\sin^{-1}\left(\frac{x}{a}\right) + \sqrt{x(a - x)} + c$

C. $a\sin^{-1}\sqrt{\frac{x}{a}} - \sqrt{x(a - x)} + c$

D. $a\sin^{-1}\sqrt{\frac{x}{a}} + \sqrt{x(a-x)} + c$

Answer: D

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302. $\int \sqrt{\frac{a+x}{x-a}}dx$

A. $\sqrt{a^2 - x^2} - a\cos^{-1}\left(\frac{x}{a}\right) + c$

B. $\sqrt{a^2 - x^2} + a\cos^{-1}\left(\frac{x}{a}\right) + c$

C. $-\sqrt{a^2 - x^2} - a\cos^{-1}\left(\frac{x}{a}\right) + c$

D. $-\sqrt{a^2 - x^2} + a\cos^{-1}\left(\frac{x}{a}\right) + c$

Answer: C

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303. $\int x\sqrt{\frac{1-x}{1+x}}dx$

A. $\frac{\cos^{-1}x}{2}+\frac{x}{2}\sqrt{1-x^2}+\sqrt{1-x^2}+c$

B. $\frac{\cos^{-1}x}{2}+\frac{x}{2}\sqrt{1-x^2}-\sqrt{1-x^2}+c$

C. $\frac{\cos^{-1}x}{2}-\frac{x}{2}\sqrt{1-x^2}+\sqrt{1-x^2}+c$

D. $\frac{\cos^{-1}x}{2}-\frac{x}{2}\sqrt{1-x^2}-\sqrt{1-x^2}+c$

Answer: B

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304. $\int x\sqrt{\frac{a^2-x^2}{a^2+x^2}}dx$

A. $\frac{-1}{2}\sqrt{a^4-x^4}+\frac{a^2}{2}\cos^{-1}\left(\frac{x^2}{a^2}\right)+c$

B. $\frac{-1}{2}\sqrt{a^4-x^4}-\frac{a^2}{2}\cos^{-1}\left(\frac{x^2}{a^2}\right)+c$

C. $\frac{1}{2}\sqrt{a^4 - x^4} - \frac{a^2}{2}\cos^{-1}\left(\frac{x^2}{a^2}\right) + c$

D. $\frac{1}{2}\sqrt{a^4 - x^4} + \frac{a^2}{2}\cos^{-1}\left(\frac{x^2}{a^2}\right) + c$

Answer: C

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305. $\int \frac{dx}{\sqrt{2ax - x^2}}$ is equal to

A. $x = a\cos t$

B. $x = 2a\cos t$

C. $x = 2at$

D. $x = 2a\sin^2 t$

Answer: D

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306. $\int \frac{dx}{\left(x^2 + 4x + 8\right)}$

A. $2\tan^{-1}(x + 2) + c$

B. $2\tan^{-1}(x + 4) + c$

C. $\frac{1}{2}\tan^{-1}\left(\frac{x + 2}{4}\right) + c$

D. $\frac{1}{2}\tan^{-1}\left(\frac{x + 2}{2}\right) + c$

Answer: D

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307. $\int \frac{1}{x^2 + 8x + 20} dx$

A. $\frac{1}{2}\tan^{-1}\left(\frac{x + 2}{2}\right) + c$

B. $\frac{1}{2}\tan^{-1}\left(\frac{x + 4}{2}\right) + c$

C. $\frac{1}{4}\tan^{-1}\left(\frac{x + 2}{4}\right) + c$

D. $\frac{1}{4}\tan^{-1}\left(\frac{x+4}{4}\right)+c$

Answer: B

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308. $\int \frac{x^2+3x+5}{(x+2)\left(x^2+2x+3\right)}dx =$

A. $\log|x+2| - \frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{x+1}{\sqrt{2}}\right)+c$

B. $\log|x+2| + \frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{x+1}{\sqrt{2}}\right)+c$

C. $\log|x+2| - \frac{1}{2}\tan^{-1}\left(\frac{x+1}{\sqrt{2}}\right)+c$

D. $\log|x+2| + \frac{1}{2}\tan^{-1}\left(\frac{x+1}{\sqrt{2}}\right)+c$

Answer: B

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309. $\int \frac{dx}{2x^2 + 3x + 5} =$

A. $\frac{2}{\sqrt{31}} \tan^{-1}\left(\frac{2x + 3}{\sqrt{31}}\right) + c$

B. $\frac{4}{\sqrt{31}} \tan^{-1}\left(\frac{2x + 3}{\sqrt{31}}\right) + c$

C. $\frac{2}{\sqrt{31}} \tan^{-1}\left(\frac{4x + 3}{\sqrt{31}}\right) + c$

D. $\frac{4}{\sqrt{31}} \tan^{-1}\left(\frac{4x + 3}{\sqrt{31}}\right) + c$

Answer: C

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310. $\int \frac{dx}{\left(4x^2 - 4x + 3\right)}$

A. $\frac{1}{2\sqrt{2}} \tan^{-1}\left(\frac{2x - 1}{\sqrt{2}}\right) + c$

B. $\frac{1}{\sqrt{2}} \tan^{-1}\left(\frac{2x - 1}{\sqrt{2}}\right) + c$

C. $\frac{1}{2\sqrt{2}}\tan^{-1}\left(\frac{2x-1}{2\sqrt{2}}\right)+c$

D. $\frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{2x-1}{2\sqrt{2}}\right)+c$

Answer: A

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311. $\int \frac{dx}{9x^2+6x+10}$

A. $\frac{1}{18}\tan^{-1}\left(\frac{3x+2}{3}\right)+c$

B. $\frac{1}{18}\tan^{-1}\left(\frac{3x+1}{3}\right)+c$

C. $\frac{1}{9}\tan^{-1}\left(\frac{3x+2}{3}\right)+c$

D. $\frac{1}{9}\tan^{-1}\left(\frac{3x+1}{3}\right)+c$

Answer: D

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312. $\int \frac{dx}{x^2 + 2x\cos\alpha + 1} =$

A. $\frac{1}{\sin\alpha}\tan^{-1}\left(\frac{x + \cos\alpha}{\sin\alpha}\right) + c$

B. $\frac{1}{\sin\alpha}\cot^{-1}\left(\frac{x + \cos\alpha}{\sin\alpha}\right) + c$

C. $\frac{1}{\cos\alpha}\tan^{-1}\left(\frac{x + \cos\alpha}{\sin\alpha}\right) + c$

D. $\frac{1}{\cos\alpha}\cot^{-1}\left(\frac{x + \cos\alpha}{\sin\alpha}\right) + c$

Answer: A

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313. Evaluete $\int \frac{x}{x^4 + x^2 + 1} dx$

A. $\frac{1}{\sqrt{3}}\tan^{-1}\left(\frac{x^2 + 2}{\sqrt{3}}\right) + c$

B. $\frac{1}{\sqrt{3}}\tan^{-1}\left(\frac{2x^2 + 2}{\sqrt{3}}\right) + c$

C. $\frac{1}{2\sqrt{3}}\tan^{-1}\left(\frac{x^2+2}{2\sqrt{3}}\right)+c$

D. $\frac{1}{2\sqrt{3}}\tan^{-1}\left(\frac{2x^2+2}{2\sqrt{3}}\right)+c$

Answer: B

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314. $\int\frac{dx}{5-6\sin 2x+9\cos^2 x}=$

A. $\frac{1}{\sqrt{34}}\cot^{-1}\left(\frac{5\tan x-6}{\sqrt{34}}\right)+c$

B. $\frac{1}{\sqrt{34}}\tan^{-1}\left(\frac{5\tan x-6}{\sqrt{34}}\right)+c$

C. $\frac{4}{\sqrt{34}}\tan^{-1}\left(\frac{5\tan x-6}{3\sqrt{34}}\right)+c$

D. $\frac{2}{\sqrt{34}}\tan^{-1}\left(\frac{5\tan x-6}{2\sqrt{34}}\right)+c$

Answer: B

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315. $\int \frac{\sec^2 x}{2\tan^2 x + 7\tan x + 13} dx =$

A. $\frac{1}{\sqrt{55}} \tan^{-1}\left(\frac{4\tan x + 7}{\sqrt{55}}\right) + c$

B. $\frac{1}{\sqrt{55}} \tan^{-1}\left(\frac{\tan x + 7}{\sqrt{55}}\right) + c$

C. $\frac{2}{\sqrt{55}} \tan^{-1}\left(\frac{4\tan x + 7}{\sqrt{55}}\right) + c$

D. $\frac{2}{\sqrt{55}} \tan^{-1}\left(\frac{\tan x + 7}{\sqrt{55}}\right) + c$

Answer: C

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316. $\int \frac{dx}{x^2 + 4x - 5} =$

A. $\frac{1}{6} \log\left|\frac{x + 5}{x - 1}\right| + c$

B. $\frac{1}{6} \log\left|\frac{x - 1}{x + 5}\right| + c$

C. $\frac{1}{3}\log\left|\frac{x+5}{x-1}\right|+c$

D. $\frac{1}{3}\log\left|\frac{x-1}{x+5}\right|+c$

Answer: B

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317. $\int\frac{dx}{2x^2+x-1}$

A. $\frac{1}{3}\log\left|\frac{2x-1}{2(x+1)}\right|+c$

B. $\frac{1}{3}\log\left|\frac{2x-1}{x+1}\right|+c$

C. $\frac{1}{6}\log\left|\frac{2x-1}{2(x+1)}\right|+c$

D. $\frac{1}{6}\log\left|\frac{2x-1}{x+1}\right|+c$

Answer: A

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318. $\int \frac{dx}{4x^2 + 20x + 17} =$

A. $\frac{1}{4\sqrt{2}} \log \left| \frac{2x - 5 - 2\sqrt{2}}{2x - 5 + 2\sqrt{2}} \right| + c$

B. $\frac{1}{4\sqrt{2}} \log \left| \frac{2x - 5 + 2\sqrt{2}}{2x - 5 - 2\sqrt{2}} \right| + c$

C. $\frac{1}{8\sqrt{2}} \log \left| \frac{2x - 5 - 2\sqrt{2}}{2x - 5 + 2\sqrt{2}} \right| + c$

D. $\frac{1}{8\sqrt{2}} \log \left| \frac{2x - 5 + 2\sqrt{2}}{2x - 5 - 2\sqrt{2}} \right| + c$

Answer: C

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319. $\int \frac{x}{2x^4 - 2x^2 - 1} dx =$

A. $\frac{1}{4\sqrt{3}} \log \left| \frac{2x^2 - 1 - \sqrt{3}}{2x^2 - 1 + \sqrt{3}} \right| + c$

B. $\frac{1}{4\sqrt{3}} \log \left| \frac{2x^2 - 1 + \sqrt{3}}{2x^2 - 1 - \sqrt{3}} \right| + c$

C. $\frac{1}{2\sqrt{3}}\log\left|\frac{2x^2 - 1 - \sqrt{3}}{2x^2 - 1 + \sqrt{3}}\right| + c$

D. $\frac{1}{2\sqrt{3}}\log\left|\frac{2x^2 - 1 + \sqrt{3}}{2x^2 - 1 - \sqrt{3}}\right| + c$

Answer: A

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320. $\int \frac{x}{4x^4 - 2x^2 - 3} dx =$

A. $\frac{1}{4\sqrt{13}}\log\left|\frac{4x^2 - 1 - \sqrt{13}}{4x^2 - 1 + \sqrt{13}}\right| + c$

B. $\frac{1}{4\sqrt{13}}\log\left|\frac{4x^2 - 1 + \sqrt{13}}{4x^2 - 1 - \sqrt{13}}\right| + c$

C. $\frac{1}{8\sqrt{13}}\log\left|\frac{4x^2 - 1 - \sqrt{13}}{4x^2 - 1 + \sqrt{13}}\right| + c$

D. $\frac{1}{8\sqrt{13}}\log\left|\frac{4x^2 - 1 + \sqrt{13}}{4x^2 - 1 - \sqrt{13}}\right| + c$

Answer: A

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321. $\int \frac{dx}{\sin^2 x + 5\sin x \cos x + 2} =$

A. $2\log\left|\frac{2\tan x + 3}{3\tan x + 3}\right| + c$

B. $\log\left|\frac{2\tan x + 3}{3\tan x + 3}\right| + c$

C. $2\log\left|\frac{3\tan x + 2}{3\tan x + 3}\right| + c$

D. $\log\left|\frac{3\tan x + 2}{3\tan x + 3}\right| + c$

Answer: D

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322. $\int \frac{\cos x}{3\sin^2 x - 4\sin x + 1} dx =$

A. $\frac{1}{2}\log\left|\frac{3\sin x - 1}{3\sin x - 3}\right| + c$

B. $\frac{1}{4}\log\left|\frac{3\sin x - 1}{3\sin x - 3}\right| + c$

C. $\frac{1}{2}\log\left|\frac{3\sin x - 3}{3\sin x - 1}\right| + c$

D. $\frac{1}{4}\log\left|\frac{3\sin x - 3}{3\sin x - 1}\right| + c$

Answer: C

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323. Evaluate $\int \frac{dx}{x\left\{6(\log x)^2 + 7\log x + 2\right\}}$.

A. $\log\left|\frac{6\log c + 3}{6\log c + 4}\right| + c$

B. $\log\left|\frac{6\log c + 4}{6\log c + 3}\right| + c$

C. $\frac{1}{3}\log\left|\frac{6\log c + 3}{6\log c + 4}\right| + c$

D. $\frac{1}{3}\log\left|\frac{6\log c + 4}{6\log c + 3}\right| + c$

Answer: A

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324. Evaluate $\int \frac{dx}{\left(1 + x - x^2\right)}$.

A. $\frac{1}{\sqrt{5}} \log \left| \frac{\sqrt{5} + 1 - 2x}{\sqrt{5} - 1 + 2x} \right| + c$

B. $\frac{1}{\sqrt{5}} \log \left| \frac{\sqrt{5} - 1 + 2x}{\sqrt{5} + 1 - 2x} \right| + c$

C. $\frac{1}{2\sqrt{5}} \log \left| \frac{\sqrt{5} + 1 - 2x}{\sqrt{5} - 1 + 2x} \right| + c$

D. $\frac{1}{2\sqrt{5}} \log \left| \frac{\sqrt{5} - 1 + 2x}{\sqrt{5} + 1 - 2x} \right| + c$

Answer: B

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325. $\int \frac{dx}{7 + 6x - x^2} =$

A. $\frac{1}{4} \log \left| \frac{7 - x}{1 + x} \right| + c$

B. $\frac{1}{4} \log \left| \frac{1 + x}{7 - x} \right| + c$

C. $\frac{1}{8}\log\left|\frac{7-x}{1+x}\right|+c$

D. $\frac{1}{8}\log\left|\frac{1+x}{7-x}\right|+c$

Answer: D

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326. $\int\frac{dx}{3-10x-25x^2}=$

A. $\frac{1}{20}\log\left|\frac{3+5x}{1-5x}\right|+c$

B. $\frac{1}{20}\log\left|\frac{1-5x}{3+5x}\right|+c$

C. $\frac{1}{10}\log\left|\frac{3+5x}{1-5x}\right|+c$

D. $\frac{1}{10}\log\left|\frac{1-5x}{3+5x}\right|+c$

Answer: A

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327. $\int \frac{1}{\sqrt{7 - 6x - x^2}} dx$ का मान होगा -

A. $\sin^{-1}\left(\frac{x - 3}{4}\right) + c$

B. $\sin^{-1}\left(\frac{x - 3}{2}\right) + c$

C. $\sin^{-1}\left(\frac{x + 3}{4}\right) + c$

D. $\sin^{-1}\left(\frac{x + 3}{2}\right) + c$

Answer: C

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328. $\int \frac{dx}{\sqrt{8 + 2x - x^2}}$

A. $\frac{1}{3}\sin^{-1}\left(\frac{x - 1}{3}\right) + c$

B. $\sin^{-1}\left(\frac{x + 1}{3}\right) + c$

C. $\frac{1}{3}\sin^{-1}\left(\frac{x + 1}{3}\right) + c$

D. $\sin^{-1}\left(\frac{x-1}{3}\right)+c$

Answer: D

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329. $\int \frac{dx}{\sqrt{3+4x-4x^2}} =$

A. $\frac{1}{2}\cos^{-1}\left(\frac{2x-1}{2}\right)+c$

B. $2\cos^{-1}\left(\frac{2x-1}{2}\right)+c$

C. $\frac{1}{2}\sin^{-1}\left(\frac{2x-1}{2}\right)+c$

D. $2\sin^{-1}\left(\frac{2x-1}{2}\right)+c$

Answer: C

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330. $\int \frac{dx}{\sqrt{21 + 4x - x^2}} =$

A. $\sin^{-1}\left(\frac{x - 2}{5}\right) + c$

B. $\cos^{-1}\left(\frac{x - 2}{5}\right) + c$

C. $\frac{1}{5}\sin^{-1}\left(\frac{x - 2}{5}\right) + c$

D. $\frac{1}{5}\cos^{-1}\left(\frac{x - 2}{5}\right) + c$

Answer: A

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331. $\int \frac{dx}{\sqrt{15 + 4x - 4x^2}} =$

A. $\frac{1}{2}\sin^{-1}\left(\frac{2x - 1}{2}\right) + c$

B. $\frac{1}{2}\sin^{-1}\left(\frac{2x - 1}{4}\right) + c$

C. $\frac{1}{4}\sin^{-1}\left(\frac{2x-1}{2}\right)+c$

D. $\frac{1}{4}\sin^{-1}\left(\frac{2x-1}{4}\right)+c$

Answer: B

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332. Evaluate : $\int \frac{e^x}{\sqrt{5-4e^x-e^{2x}}}dx$

A. $\sin^{-1}\left(\frac{e^x-2}{3}\right)+c$

B. $\sin^{-1}\left(\frac{e^x+2}{3}\right)+c$

C. $\sin^{-1}\left(\frac{e^x-1}{3}\right)+c$

D. $\sin^{-1}\left(\frac{e^x+1}{3}\right)+c$

Answer: B

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333. $\int \frac{dx}{\sqrt{x^2 + 4x + 29}} =$

A. $\log\left|x + 4 + \sqrt{x^2 + 4x + 29}\right| + c$

B. $\log\left|x - 4 + \sqrt{x^2 + 4x + 29}\right| + c$

C. $\log\left|x + 2 + \sqrt{x^2 + 4x + 29}\right| + c$

D. $\log\left|x - 2 + \sqrt{x^2 + 4x + 29}\right| + c$

Answer: C

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334. $\int \frac{dx}{\sqrt{3x^2 - 4x + 2}} =$

A. $\frac{2}{\sqrt{3}}\log\left|x + \frac{2}{3} + \sqrt{x^2 - \frac{4x}{3} + \frac{2}{3}}\right| + c$

B. $\frac{2}{\sqrt{3}}\log\left|x - \frac{2}{3} + \sqrt{x^2 - \frac{4x}{3} + \frac{2}{3}}\right| + c$

C. $\frac{1}{\sqrt{3}}\log\left|x+\frac{2}{3}+\sqrt{x^2-\frac{4x}{3}+\frac{2}{3}}\right|+c$

D. $\frac{1}{\sqrt{3}}\log\left|x-\frac{2}{3}+\sqrt{x^2-\frac{4x}{3}+\frac{2}{3}}\right|+c$

Answer: D

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335. Evaluate: $\int\frac{1}{3x^2+5x+7}dx$

A. $\frac{1}{2\sqrt{3}}\log\left|x+\frac{5}{3}+\sqrt{x^2+\frac{5x}{3}+\frac{7}{3}}\right|+c$

B. $\frac{1}{2\sqrt{3}}\log\left|x+\frac{5}{6}+\sqrt{x^2+\frac{5x}{3}+\frac{7}{3}}\right|+c$

C. $\frac{1}{\sqrt{3}}\log\left|x+\frac{5}{3}+\sqrt{x^2+\frac{5x}{3}+\frac{7}{3}}\right|+c$

D. $\frac{1}{\sqrt{3}}\log\left|x+\frac{5}{6}+\sqrt{x^2+\frac{5x}{3}+\frac{7}{3}}\right|+c$

Answer: D

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336. $\int \frac{dx}{\sqrt{2x^2+3x+5}} =$

A. $\frac{1}{2\sqrt{2}}\log\left|x+\frac{3}{4}+\sqrt{x^2+\frac{3x}{2}+\frac{5}{2}}\right|+c$

B. $\frac{1}{2\sqrt{2}}\log\left|x+\frac{3}{2}+\sqrt{x^2+\frac{3x}{2}+\frac{5}{2}}\right|+c$

C. $\frac{1}{\sqrt{2}}\log\left|x+\frac{3}{4}+\sqrt{x^2+\frac{3x}{2}+\frac{5}{2}}\right|+c$

D. $\frac{1}{\sqrt{2}}\log\left|x+\frac{3}{2}+\sqrt{x^2+\frac{3x}{2}+\frac{5}{2}}\right|+c$

Answer: C

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337. $\int \frac{x^2}{\sqrt{x^6+2x^3+3}}dx$

A. $\frac{1}{3}\log\left|x^3+1+\sqrt{x^6+2x^3+3}\right|+c$

B. $\frac{1}{3}\log\left|x^3 - 1 + \sqrt{x^6 + 2x^3 + 3}\right| + c$

C. $3\log\left|x^3 + 1 + \sqrt{x^6 + 2x^3 + 3}\right| + c$

D. $3\log\left|x^3 - 1 + \sqrt{x^6 + 2x^3 + 3}\right| + c$

Answer: A

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338. $\int \frac{\cos x}{\sqrt{\sin^2 x - 2\sin x + 5}} dx =$

A. $\log\left|\sin x - 1 + \sqrt{\sin^2 x - 2\sin x + 5}\right| + c$

B. $-\log\left|\sin x - 1 + \sqrt{\sin^2 x - 2\sin x + 5}\right| + c$

C. $\log\left|\sin x + 1 + \sqrt{\sin^2 x + 2\sin x + 5}\right| + c$

D. $-\log\left|\sin x + 1 + \sqrt{\sin^2 x + 2\sin x + 5}\right| + c$

Answer: A

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339. $\int \frac{\sec^2 x}{\sqrt{2\tan^2 x + 3\tan x + 3}} dx =$

A. $\log\left|\tan x + \frac{3}{2} + \sqrt{\tan^2 x + \frac{3\tan x}{2} + \frac{3}{2}}\right| + c$

B. $\log\left|\tan x + \frac{1}{2} + \sqrt{\tan^2 x + \frac{3\tan x}{2} + \frac{3}{2}}\right| + c$

C. $\frac{1}{\sqrt{2}}\log\left|\tan x + \frac{3}{4} + \sqrt{\tan^2 x + \frac{3\tan x}{2} + \frac{3}{2}}\right| + c$

D. $\frac{1}{\sqrt{2}}\log\left|\tan x + \frac{1}{4} + \sqrt{\tan^2 x + \frac{3\tan x}{2} + \frac{3}{2}}\right| + c$

Answer: C

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340. $\int \frac{1}{\sqrt{(x-a)(x-b)}} dx$

A. $\log\left|x + \frac{a+b}{2} + \sqrt{x^2 + (a+b)x + ab}\right| + c$

B. $\log\left|x - \frac{a+b}{2} + \sqrt{x^2 + (a+b)x + ab}\right| + c$

C. $\log\left|x+\frac{a-b}{2}+\sqrt{x^2+(a-b)x+ab}\right|+c$

D. $\log\left|x-\frac{a-b}{2}+\sqrt{x^2+(a-b)x+ab}\right|+c$

Answer: B

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341. $\int\frac{dx}{\sqrt{x^2-8x-20}}=$

A. $\log\left|x+4-\sqrt{x^2-8x-20}\right|+c$

B. $\log\left|x-4+\sqrt{x^2-8x-20}\right|+c$

C. $\log\left|x-4-\sqrt{x^2-8x-20}\right|+c$

D. $\log\left|x+4+\sqrt{x^2-8x-20}\right|+c$

Answer: B

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342. $\int \frac{dx}{\sqrt{(x-2)(x-3)}} =$

A. $\log\left|x+\frac{5}{2}+\sqrt{x^2-5x+6}\right|+c$

B. $\log\left|x-\frac{5}{2}+\sqrt{x^2-5x+6}\right|+c$

C. $\log\left|x+\frac{5}{2}+\sqrt{x^2+5x+6}\right|+c$

D. $\log\left|x-\frac{5}{2}+\sqrt{x^2+5x+6}\right|+c$

Answer: B

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343. $\int \frac{dx}{\sqrt{x(5x-2)}} =$

A. $\sqrt{5}\log\left|x-\frac{1}{5}+\sqrt{x^2-\frac{2x}{5}}\right|+c$

B. $\frac{1}{\sqrt{5}}\log\left|x-\frac{1}{5}+\sqrt{x^2-\frac{2x}{5}}\right|+c$

C. $\frac{2}{\sqrt{5}}\log\left|x-\frac{1}{5}+\sqrt{x^2-\frac{2x}{5}}\right|+c$

D. $2\sqrt{5}\log\left|x - \frac{1}{5} + \sqrt{x^2 - \frac{2x}{5}}\right| + c$

Answer: B

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344. $\int \frac{\cos x}{\sqrt{\sin^2 x - \sin x - 3}} dx =$

A. $\log\left|\sin x + 1 + \sqrt{\sin^2 - 2\sin x - 3}\right| + c$

B. $\log\left|\sin x + 1 - \sqrt{\sin^2 - 2\sin x - 3}\right| + c$

C. $\log\left|\sin x - 1 + \sqrt{\sin^2 - 2\sin x - 3}\right| + c$

D. $\log\left|\sin x - 1 - \sqrt{\sin^2 - 2\sin x - 3}\right| + c$

Answer: C

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345. Evaluate: $\int \frac{\sin 2x}{\sqrt{\sin^4 x + 4\sin^2 x - 2}} dx$

A. $-\log\left|\sin^2 x + 2 + \sqrt{\sin^4 + 4\sin^2 x - 2}\right| + c$

B. $\log\left|\sin^2 x + 2 + \sqrt{\sin^4 + 4\sin^2 x - 2}\right| + c$

C. $-\log\left|\sin x + 2 + \sqrt{\sin^4 + 4\sin^2 x - 2}\right| + c$

D. $\log\left|\sin x + 2 + \sqrt{\sin^4 + 4\sin^2 x - 2}\right| + c$

Answer: B

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346. $\int \frac{x}{x^2 + x + 1} dx =$

A. $\frac{1}{2}\log\left|x^2 + 2x + 1\right| - \frac{1}{\sqrt{3}}\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right) + c$

B. $\frac{1}{2}\log\left|x^2 + 2x + 1\right| + \frac{1}{\sqrt{3}}\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right) + c$

C. $\frac{1}{2}\log\left|x^2 + 2x + 1\right| - \frac{2}{\sqrt{3}}\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right) + c$

D. $\frac{1}{2}\log\left|x^2+2x+1\right|+\frac{2}{\sqrt{3}}\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

Answer: A

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347. Evaluate: $\int\frac{1-3x}{3x^2+4x+2}dx$

A. $\frac{1}{2}\log\left|3x^2+4x+2\right|+\frac{3}{\sqrt{2}}\tan^{-1}\left(\frac{3x+2}{\sqrt{2}}\right)+c$

B. $\frac{-1}{2}\log\left|3x^2+4x+2\right|+\frac{3}{\sqrt{2}}\tan^{-1}\left(\frac{3x+2}{\sqrt{2}}\right)+c$

C. $\frac{-1}{2}\log\left|3x^2+4x+2\right|-\frac{3}{\sqrt{2}}\tan^{-1}\left(\frac{3x+2}{\sqrt{2}}\right)+c$

D. $\frac{1}{2}\log\left|3x^2+4x+2\right|-\frac{3}{\sqrt{2}}\tan^{-1}\left(\frac{3x+2}{\sqrt{2}}\right)+c$

Answer: B

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348. $\int \frac{5x - 1}{3x^2 + x + 2} dx =$

A. $\frac{5}{6}\log\left|3x^2 + x + 2\right| - \frac{11}{3\sqrt{23}}\tan^{-1}\left(\frac{6x + 1}{\sqrt{23}}\right) + c$

B. $\frac{5}{6}\log\left|3x^2 + x + 2\right| + \frac{11}{3\sqrt{23}}\tan^{-1}\left(\frac{6x + 1}{\sqrt{23}}\right) + c$

C. $\frac{5}{3}\log\left|3x^2 + x + 2\right| - \frac{11}{3\sqrt{23}}\tan^{-1}\left(\frac{6x + 1}{\sqrt{23}}\right) + c$

D. $\frac{5}{3}\log\left|3x^2 + x + 2\right| + \frac{11}{3\sqrt{23}}\tan^{-1}\left(\frac{6x + 1}{\sqrt{23}}\right) + c$

Answer: A

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349. $\frac{3x + 4}{x^2 + 6x + 5}$

A. $\frac{3}{2}\log\left|x^2 + 6x + 5\right| + \frac{5}{4}\log\left|\frac{x + 1}{x + 5}\right| + c$

B. $\frac{3}{2}\log\left|x^2 + 6x + 5\right| - \frac{5}{4}\log\left|\frac{x + 1}{x + 5}\right| + c$

C. $\frac{3}{2}\log\left|x^2 + 6x + 5\right| + \frac{5}{2}\log\left|\frac{x + 1}{x + 5}\right| + c$

D. $\frac{3}{2}\log\left|x^2+6x+5\right| - \frac{5}{2}\log\left|\frac{x+1}{x+5}\right| + c$

Answer: B

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350. $\int \frac{2x+3}{2x^2+3x-1}dx =$

A. $\frac{1}{2}\log\left|2x^2+3x-1\right| + \frac{3}{2\sqrt{17}}\log\left|\frac{4x+3-\sqrt{17}}{4x+3+\sqrt{17}}\right| + c$

B. $\frac{1}{2}\log\left|2x^2+3x-1\right| - \frac{3}{2\sqrt{17}}\log\left|\frac{4x+3-\sqrt{17}}{4x+3+\sqrt{17}}\right| + c$

C. $\frac{1}{2}\log\left|2x^2+3x-1\right| + \frac{3}{\sqrt{17}}\log\left|\frac{4x+3-\sqrt{17}}{4x+3+\sqrt{17}}\right| + c$

D. $\frac{1}{2}\log\left|2x^2+3x-1\right| - \frac{3}{\sqrt{17}}\log\left|\frac{4x+3-\sqrt{17}}{4x+3+\sqrt{17}}\right| + c$

Answer: A

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351. $\int \frac{2 - x}{4x^2 + 4x - 3} dx =$

A. $\frac{5}{16}\log\left|\frac{2x - 1}{2x + 3}\right| + \frac{1}{8}\log\left|4x^2 + 4x - 3\right| + c$

B. $\frac{5}{16}\log\left|\frac{2x - 1}{2x + 3}\right| - \frac{1}{8}\log\left|4x^2 + 4x - 3\right| + c$

C. $\frac{5}{32}\log\left|\frac{2x - 1}{2x + 3}\right| + \frac{1}{8}\log\left|4x^2 + 4x - 3\right| + c$

D. $\frac{5}{32}\log\left|\frac{2x - 1}{2x + 3}\right| - \frac{1}{8}\log\left|4x^2 + 4x - 3\right| + c$

Answer: B

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352. $\int \frac{2x + 1}{8 - 6x - 9x^2} dx =$

A. $\frac{1}{54}\log\left|\frac{4 + 3x}{2 - 3x}\right| + \frac{1}{9}\log\left|8 - 6x - 9x^2\right| + c$

B. $\frac{1}{54}\log\left|\frac{4 + 3x}{2 - 3x}\right| - \frac{1}{9}\log\left|8 - 6x - 9x^2\right| + c$

C. $\frac{1}{54}\log\left|\frac{4 + 3x}{2 - 3x}\right| + \frac{1}{3}\log\left|8 - 6x - 9x^2\right| + c$

D. $\frac{1}{54}\log\left|\frac{4+3x}{2-3x}\right| - \frac{1}{3}\log\left|8-6x-9x^2\right| + c$

Answer: B

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353. $\int \frac{x}{\sqrt{8+x-x^2}}dx =$

A. $\frac{1}{2}\sin^{-1}\left(\frac{2x-1}{\sqrt{33}}\right) + \sqrt{8+x-x^2} + c$

B. $\frac{1}{2}\sin^{-1}\left(\frac{2x-1}{\sqrt{33}}\right) - \sqrt{8+x-x^2} + c$

C. $\frac{1}{4}\sin^{-1}\left(\frac{2x-1}{\sqrt{33}}\right) + \sqrt{8+x-x^2} + c$

D. $\frac{1}{4}\sin^{-1}\left(\frac{2x-1}{\sqrt{33}}\right) - \sqrt{8+x-x^2} + c$

Answer: B

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354. $\int\sqrt{\frac{9-x}{x}}dx =$

A. $\sqrt{(9x-x^2)}+\frac{3}{2}\sin^{-1}\left(\frac{2x-9}{9}\right)+c$

B. $\sqrt{(9x-x^2)}-\frac{3}{2}\sin^{-1}\left(\frac{2x-9}{9}\right)+c$

C. $\sqrt{(9x-x^2)}+\frac{9}{2}\sin^{-1}\left(\frac{2x-9}{9}\right)+c$

D. $\sqrt{(9x-x^2)}-\frac{9}{2}\sin^{-1}\left(\frac{2x-9}{9}\right)+c$

Answer: C

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355. $\frac{7x+3}{\sqrt{3+2x-x^2}}$

A. $5\sin^{-1}\left(\frac{x-1}{2}\right)+7\sqrt{3+2x-x^2}+c$

B. $5\sin^{-1}\left(\frac{x-1}{2}\right)-7\sqrt{3+2x-x^2}+c$

C. $10\sin^{-1}\left(\frac{x-1}{2}\right)+7\sqrt{3+2x-x^2}+c$

D. $10\sin^{-1}\left(\frac{x-1}{2}\right) - 7\sqrt{3+2x-x^2} + c$

Answer: D

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356. $\int \frac{2x+1}{\sqrt{x^2+2x+3}}dx =$

A. $2\sqrt{x^2+2x+3} - \log\left|x+1+\sqrt{x^2+2x+3}\right| + c$

B. $2\sqrt{x^2+2x+3} + \log\left|x+1+\sqrt{x^2+2x+3}\right| + c$

C. $\sqrt{x^2+2x+3} - \log\left|x+1+\sqrt{x^2+2x+3}\right| + c$

D. $\sqrt{x^2+2x+3} + \log\left|x+1+\sqrt{x^2+2x+3}\right| + c$

Answer: A

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357. $\int \frac{3x+2}{\sqrt{2x^2+2x+1}}dx =$

A. $\frac{3}{2}\sqrt{2x^2+2x+1} - \frac{1}{\sqrt{2}}\log\left|x+\frac{1}{2}+\sqrt{x^2+x+\frac{1}{2}}\right| + c$

B. $\frac{3}{2}\sqrt{2x^2+2x+1} + \frac{1}{\sqrt{2}}\log\left|x+\frac{1}{2}+\sqrt{x^2+x+\frac{1}{2}}\right| + c$

C. $\frac{3}{2}\sqrt{2x^2+2x+1} - \frac{1}{2\sqrt{2}}\log\left|x+\frac{1}{2}+\sqrt{x^2+x+\frac{1}{2}}\right| + c$

D. $\frac{3}{2}\sqrt{2x^2+2x+1} + \frac{1}{2\sqrt{2}}\log\left|x+\frac{1}{2}+\sqrt{x^2+x+\frac{1}{2}}\right| + c$

Answer: D

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358. $\int \sqrt{\frac{x-1}{x}}dx =$

A. $\sqrt{x^2-x} + \log\left|x-\frac{1}{2}+\sqrt{x^2-x}\right| + c$

B. $\sqrt{x^2-x} - \log\left|x-\frac{1}{2}+\sqrt{x^2-x}\right| + c$

C. $\sqrt{x^2 - x} + \frac{1}{2}\log\left|x - \frac{1}{2} + \sqrt{x^2 - x}\right| + c$

D. $\sqrt{x^2 - x} - \frac{1}{2}\log\left|x - \frac{1}{2} + \sqrt{x^2 - x}\right| + c$

Answer: D

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359. $\int\sqrt{\frac{x+1}{x+2}}dx =$

A. $\sqrt{x^2 + 3x + 2} - \frac{1}{4}\log\left|x + \frac{3}{2} + \sqrt{x^2 + 3x + 2}\right| + c$

B. $\sqrt{x^2 + 3x + 2} + \frac{1}{4}\log\left|x + \frac{3}{2} + \sqrt{x^2 + 3x + 2}\right| + c$

C. $\sqrt{x^2 + 3x + 2} - \frac{1}{2}\log\left|x + \frac{3}{2} + \sqrt{x^2 + 3x + 2}\right| + c$

D. $\sqrt{x^2 + 3x + 2} + \frac{1}{2}\log\left|x + \frac{3}{2} + \sqrt{x^2 + 3x + 2}\right| + c$

Answer: C

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360. If $\int\sqrt{\frac{x-5}{x-7}}dx = A\sqrt{x^2-12x+35} + \log\left|x-6+\sqrt{x^2-12x+35}\right| + C$, then

A. -1

B. $\frac{1}{2}$

C. $\frac{-1}{2}$

D. 1

Answer: D

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361. $\int\frac{x^2+5}{x^2+1}dx =$

A. $x - 4\tan^{-1}x + c$

B. $x + 4\tan^{-1}x + c$

C. $x - 2\tan^{-1}x + c$

D. $x + 2\tan^{-1}x + c$

Answer: B

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362. $\int \frac{1 - x^2}{1 + x^2} dx$

A. $2\tan^{-1}x + x + c$

B. $2\tan^{-1}x - x + c$

C. $\tan^{-1}x + x + c$

D. $\tan^{-1}x - x + c$

Answer: B

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363. Evaluate: $\int \frac{x^2 + 5x + 3}{x^2 + 3x + 2} dx$

A. $x + \log\left|x^2 + 3x + 2\right| + 2\log\left|\frac{x + 1}{x + 2}\right| + c$

B. $x - \log\left|x^2 + 3x + 2\right| + 2\log\left|\frac{x+1}{x+2}\right| + c$

C. $x + \log\left|x^2 + 3x + 2\right| - 2\log\left|\frac{x+1}{x+2}\right| + c$

D. $x - \log\left|x^2 + 3x + 2\right| - 2\log\left|\frac{x+1}{x+2}\right| + c$

Answer: C

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364. $\int \frac{x - x^2}{x^2 - 2x - 3} dx =$

A. $x + \frac{1}{2}\log\left|x^2 - 2x - 3\right| + \log\left|\frac{x-3}{x+1}\right| + c$

B. $-x + \frac{1}{2}\log\left|x^2 - 2x - 3\right| + \log\left|\frac{x-3}{x+1}\right| + c$

C. $-x - \frac{1}{2}\log\left|x^2 - 2x - 3\right| + \log\left|\frac{x-3}{x+1}\right| + c$

D. $-x - \frac{1}{2}\log\left|x^2 - 2x - 3\right| - \log\left|\frac{x-3}{x+1}\right| + c$

Answer: D

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365. $\int \frac{x^3}{x^2+x+1}dx =$

A. $\frac{x^2}{2}+x+\frac{1}{\sqrt{3}}\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

B. $\frac{x^2}{2}-x+\frac{1}{\sqrt{3}}\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

C. $\frac{x^2}{2}+x+\frac{2}{\sqrt{3}}\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

D. $\frac{x^2}{2}-x+\frac{2}{\sqrt{3}}\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+c$

Answer: D

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366. Evaluate: $\int \frac{x^3+x^2+2x+1}{x^2-x+1}dx$

A. $\frac{x^2}{2}+2x+\frac{3}{2}\log\left|x^2-x+1\right|+\frac{1}{\sqrt{3}}\tan^{-1}\left(\frac{2x-1}{\sqrt{3}}\right)+c$

B. $\frac{x^2}{2} + 2x + \frac{3}{2}\log\left|x^2 - x + 1\right| + \frac{2}{\sqrt{3}}\tan^{-1}\left(\frac{2x - 1}{\sqrt{3}}\right) + c$

C. $\frac{x^2}{2} + 2x + \frac{1}{2}\log\left|x^2 - x + 1\right| + \frac{1}{\sqrt{3}}\tan^{-1}\left(\frac{2x - 1}{\sqrt{3}}\right) + c$

D. $\frac{x^2}{2} + 2x + \frac{1}{2}\log\left|x^2 - x + 1\right| + \frac{2}{\sqrt{3}}\tan^{-1}\left(\frac{2x - 1}{\sqrt{3}}\right) + c$

Answer: A

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367. $\int \frac{x^3 - 4x^2 + 6x + 5}{x^2 - 2x + 3} dx =$

A. $\frac{x^2}{2} + 2x + \frac{1}{2}\log\left|x^2 - 2x + 3\right| + \frac{10}{\sqrt{2}}\tan^{-1}\left(\frac{x - 1}{\sqrt{2}}\right) + c$

B. $\frac{x^2}{2} + 2x + \frac{1}{2}\log\left|x^2 - 2x + 3\right| + \frac{5}{\sqrt{2}}\tan^{-1}\left(\frac{x - 1}{\sqrt{2}}\right) + c$

C. $\frac{x^2}{2} - 2x - \frac{1}{2}\log\left|x^2 - 2x + 3\right| + \frac{10}{\sqrt{2}}\tan^{-1}\left(\frac{x - 1}{\sqrt{2}}\right) + c$

D. $\frac{x^2}{2} - 2x - \frac{1}{2}\log\left|x^2 - 2x + 3\right| + \frac{5}{\sqrt{2}}\tan^{-1}\left(\frac{x - 1}{\sqrt{2}}\right) + c$

Answer: C

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368. $\int \frac{x^3 + 4x^2 - 3x - 2}{x + 2} dx$

A. $\frac{x^2}{2} + x + \log\left|x^2 + 3x + 2\right| + 3\log\left|\frac{x+1}{x+2}\right| + c$

B. $\frac{x^2}{2} + x + \log\left|x^2 + 3x + 2\right| - 3\log\left|\frac{x+1}{x+2}\right| + c$

C. $\frac{x^2}{2} + x - \log\left|x^2 + 3x + 2\right| + 3\log\left|\frac{x+1}{x+2}\right| + c$

D. $\frac{x^2}{2} + x - \log\left|x^2 + 3x + 2\right| - 3\log\left|\frac{x+1}{x+2}\right| + c$

Answer: B

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369. $\int \frac{4x^4 - 4x^3 + x^2 - 4x - 5}{4x^2 - 4x - 3} dx =$

A. $\frac{x^2}{3} + x + \frac{1}{4}\log\left|\frac{2x - 3}{2x + 1}\right| + c$

B. $\frac{x^2}{3} + x - \frac{1}{4}\log\left|\frac{2x - 3}{2x + 1}\right| + c$

C. $\frac{x^2}{3} - x + \frac{1}{4}\log\left|\frac{2x - 3}{2x + 1}\right| + c$

D. $\frac{x^2}{3} - x - \frac{1}{4}\log\left|\frac{2x - 3}{2x + 1}\right| + c$

Answer: B

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370. $\int\sqrt{e^x - 1}dx = ?$

A. $2\sqrt{e^x - 1} - 2\tan^{-1}\sqrt{e^x - 1} + c$

B. $\sqrt{e^x - 1} - \tan^{-1}\sqrt{e^x - 1} + c$

C. $2\sqrt{e^x - 1} + 2\tan^{-1}\sqrt{e^x - 1} + c$

D. $\sqrt{e^x - 1} + \tan^{-1}\sqrt{e^x - 1} + c$

Answer: A

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371. $\int \frac{dx}{(x-1)\sqrt{x+1}} =$

A. $\frac{1}{\sqrt{2}}\log\left|\frac{\sqrt{x+1}-\sqrt{2}}{\sqrt{x+1}+\sqrt{2}}\right| + c$

B. $\frac{1}{\sqrt{2}}\log\left|\frac{\sqrt{x+1}+\sqrt{2}}{\sqrt{x+1}-\sqrt{2}}\right| + c$

C. $\frac{1}{2\sqrt{2}}\log\left|\frac{\sqrt{x+1}-\sqrt{2}}{\sqrt{x+1}+\sqrt{2}}\right| + c$

D. $\frac{1}{2\sqrt{2}}\log\left|\frac{\sqrt{x+1}+\sqrt{2}}{\sqrt{x+1}-\sqrt{2}}\right| + c$

Answer: A

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372. $\int \frac{dx}{(x+1)\sqrt{x-1}} =$

A. $\sqrt{2}\tan^{-1}\sqrt{\frac{x-1}{2}} + c$

B. $2\tan^{-1}\sqrt{\frac{x-1}{2}}+c$

C. $\frac{1}{\sqrt{2}}\tan^{-1}\sqrt{\frac{x-1}{2}}+c$

D. $\frac{1}{2}\tan^{-1}\sqrt{\frac{x-1}{2}}+c$

Answer: A

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373. $\int\frac{dx}{(2x+1)\sqrt{x-2}}=$

A. $\frac{\sqrt{2}}{5}\tan^{-1}\sqrt{\frac{2x-4}{5}}+c$

B. $\frac{2}{\sqrt{5}}\tan^{-1}\sqrt{\frac{2x-4}{5}}+c$

C. $\frac{2}{5}\tan^{-1}\sqrt{\frac{2x-4}{5}}+c$

D. $\sqrt{\frac{2}{5}}\tan^{-1}\sqrt{\frac{2x-4}{5}}+c$

Answer: D

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374. $\int \frac{dx}{(2x+3)\sqrt{x-4}} =$

A. $\sqrt{\frac{11}{2}}\tan^{-1}\sqrt{\frac{2x-8}{11}} + c$

B. $\frac{11}{2}\tan^{-1}\sqrt{\frac{2x-8}{11}} + c$

C. $\sqrt{\frac{2}{11}}\tan^{-1}\sqrt{\frac{2x-8}{11}} + c$

D. $\frac{2}{11}\tan^{-1}\sqrt{\frac{2x-8}{11}} + c$

Answer: C

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375. $\int \frac{dx}{(2x+3)\sqrt{3x+2}} =$

A. $\frac{2}{5}\tan^{-1}\sqrt{\frac{6x+4}{5}} + c$

B. $\frac{5}{2}\tan^{-1}\sqrt{\frac{6x+4}{5}} + c$

C. $\sqrt{\frac{2}{5}}\tan^{-1}\sqrt{\frac{6x+4}{5}}+c$

D. $\sqrt{\frac{5}{2}}\tan^{-1}\sqrt{\frac{6x+4}{5}}+c$

Answer: C

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376. $\int\frac{dx}{(x+1)\sqrt{x^2-2}}=$

A. $-\sin^{-1}\left(\frac{x+2}{\sqrt{2}(x+1)}\right)+c$

B. $-\cos^{-1}\left(\frac{x+2}{\sqrt{2}(x+1)}\right)+c$

C. $-\sin^{-1}\left(\frac{\sqrt{2}(x+1)}{x+2}\right)+c$

D. $-\cos^{-1}\left(\frac{\sqrt{2}(x+1)}{x+2}\right)+c$

Answer: A

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377. $\int \frac{dx}{(-1)\sqrt{1+x^2}} =$

A. $\frac{1}{\sqrt{2}}\log\left|\frac{1}{1-x}-\frac{1}{2}+\sqrt{\frac{1}{(1-x)^2}-\frac{1}{1-x}+\frac{1}{2}}\right|+c$

B. $\frac{1}{\sqrt{2}}\log\left|\frac{1}{1-x}+\frac{1}{2}+\sqrt{\frac{1}{(1-x)^2}-\frac{1}{1-x}+\frac{1}{2}}\right|+c$

C. $\frac{1}{\sqrt{2}}\log\left|\frac{1}{1-x}-\frac{1}{2}-\sqrt{\frac{1}{(1-x)^2}+\frac{1}{1-x}+\frac{1}{2}}\right|+c$

D. $\frac{1}{\sqrt{2}}\log\left|\frac{1}{1-x}+\frac{1}{2}+\sqrt{\frac{1}{(1-x)^2}+\frac{1}{1-x}+\frac{1}{2}}\right|+c$

Answer: A

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378. $\int \frac{dx}{x\sqrt{2ax-x^2}} =$

A. $a\sqrt{\frac{2a-x}{x}}+c$

B. $\frac{1}{a}\sqrt{\frac{2a - x}{x}} + c$

C. $-a\sqrt{\frac{2a - x}{x}} + c$

D. $\frac{-1}{a}\sqrt{\frac{2a - x}{x}} + c$

Answer: D

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379. Evaluate: $\int \frac{dx}{(x + 1)\sqrt{1 + x - x^2}}$

A. $\frac{1}{\sqrt{2}}\sin^{-1}\left(\frac{\sqrt{2}x}{x + 1}\right) + c$

B. $\frac{1}{\sqrt{2}}\cos^{-1}\left(\frac{\sqrt{2}x}{x + 1}\right) + c$

C. $\sqrt{2}\sin^{-1}\left(\frac{\sqrt{2}x}{x + 1}\right) + c$

D. $\sqrt{2}\cos^{-1}\left(\frac{\sqrt{2}x}{x + 1}\right) + c$

Answer: A

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380. $\int \frac{dx}{x\sqrt{2x^2 - 2x + 1}} =$

A. $-\log x + \log\left|1 - x + \sqrt{1 - 2x + 2x^2}\right| + c$

B. $\log x + \log\left|1 - x + \sqrt{1 - 2x + 2x^2}\right| + c$

C. $\log x - \log\left|1 - x + \sqrt{1 - 2x + 2x^2}\right| + c$

D. $-\log x - \log\left|1 - x + \sqrt{1 - 2x + 2x^2}\right| + c$

Answer: C

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381. $\int \frac{dx}{1 - 2\sin x} =$

A. $\frac{1}{2\sqrt{3}}\log\left|\frac{\tan\left(\frac{x}{2}\right)-2+\sqrt{3}}{\tan\left(\frac{x}{2}\right)-2-\sqrt{3}}\right|+c$

B. $\frac{1}{2\sqrt{3}}\log\left|\frac{\tan\left(\frac{x}{2}\right)-2-\sqrt{3}}{\tan\left(\frac{x}{2}\right)-2+\sqrt{3}}\right|+c$

C. $\frac{1}{\sqrt{3}}\log\left|\frac{\tan\left(\frac{x}{2}\right)-2-\sqrt{3}}{\tan\left(\frac{x}{2}\right)-2+\sqrt{3}}\right|+c$

D. $\frac{1}{\sqrt{3}}\log\left|\frac{\tan\left(\frac{x}{2}\right)-2+\sqrt{3}}{\tan\left(\frac{x}{2}\right)-2-\sqrt{3}}\right|+c$

Answer: C

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382. $\int\frac{dx}{3+2\sin x}=$

A. $\frac{2}{\sqrt{5}}\tan^{-1}\left(\frac{1}{\sqrt{5}}\left(3\tan\left(\frac{x}{2}\right)+2\right)\right)+c$

B. $\frac{2}{\sqrt{5}}\tan^{-1}\left(\frac{1}{\sqrt{5}}\left(\tan\left(\frac{x}{2}\right)+2\right)\right)+c$

C. $\frac{2}{2\sqrt{5}}\tan^{-1}\left(\frac{1}{\sqrt{5}}\left(3\tan\left(\frac{x}{2}\right)+2\right)\right)+c$

D. $\frac{2}{\sqrt{5}}\tan^{-1}\left(\frac{1}{2\sqrt{5}}\left(\tan\left(\frac{x}{2}\right)+2\right)\right)+c$

Answer: A

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383. $\frac{1}{4+5\sin x}$

A. $\frac{1}{3}\log\left|\frac{2\tan\left(\frac{x}{2}\right)+1}{2\tan\left(\frac{x}{2}\right)+2}\right|+c$

B. $\frac{1}{3}\log\left|\frac{2\tan\left(\frac{x}{2}\right)+2}{2\tan\left(\frac{x}{2}\right)+1}\right|+c$

C. $\frac{1}{3}\log\left|\frac{2\tan\left(\frac{x}{2}\right)+1}{2\tan\left(\frac{x}{2}\right)+4}\right|+c$

D. $\frac{1}{3}\log\left|\frac{2\tan\left(\frac{x}{2}\right)+4}{2\tan\left(\frac{x}{2}\right)+1}\right|+c$

Answer: C

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384. $\int\frac{dx}{3+5\cos x}=$

A. $\frac{1}{2}\log\left|\frac{2-\tan\left(\frac{x}{2}\right)}{2+\tan\left(\frac{x}{2}\right)}\right|+c$

B. $\frac{1}{2}\log\left|\frac{2+\tan\left(\frac{x}{2}\right)}{2-\tan\left(\frac{x}{2}\right)}\right|+c$

C. $\frac{1}{4}\log\left|\frac{2-\tan\left(\frac{x}{2}\right)}{2+\tan\left(\frac{x}{2}\right)}\right|+c$

D. $\frac{1}{4}\log\left|\frac{2+\tan\left(\frac{x}{2}\right)}{2-\tan\left(\frac{x}{2}\right)}\right|+c$

Answer: D

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385. $\frac{1}{4-5\cos x}$

A. $\frac{1}{3}\log\left|\frac{3\tan\left(\frac{x}{2}\right)-1}{3\tan\left(\frac{x}{2}\right)+1}\right|+c$

B. $\frac{1}{3}\log\left|\frac{3\tan\left(\frac{x}{2}\right)+1}{3\tan\left(\frac{x}{2}\right)-1}\right|+c$

C. $\frac{1}{3}\log\left|\frac{\tan\left(\frac{x}{2}\right)-1}{\tan\left(\frac{x}{2}\right)+1}\right|+c$

D. $\frac{1}{3}\log\left|\frac{\tan\left(\frac{x}{2}\right)+1}{\tan\left(\frac{x}{2}\right)-1}\right|+c$

Answer: A

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386. $\int\frac{dx}{1-\sin x+\cos x}=$

A. $\log\left|\left(\tan\left(\frac{x}{2}\right)+1\right)\right|+c$

B. $-\log\left|\left(\tan\left(\frac{x}{2}\right)+1\right)\right|+c$

C. $\log\left|\left(\tan\left(\frac{x}{2}\right)-1\right)\right|+c$

D. $-\log\left|\left(\tan\left(\frac{x}{2}\right)-1\right)\right|+c$

Answer: D

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387. $\int \frac{dx}{2 + \cos x - \sin x} =$

A. $\sqrt{2}\tan^{-1}\left(\frac{1}{2}\left(\tan\left(\frac{x}{2}\right) - 1\right)\right) + c$

B. $\sqrt{2}\tan^{-1}\left(\frac{1}{\sqrt{2}}\left(\tan\left(\frac{x}{2}\right) - 1\right)\right) + c$

C. $2\tan^{-1}\left(\frac{1}{2}\left(\tan\left(\frac{x}{2}\right) - 1\right)\right) + c$

D. $2\tan^{-1}\left(\frac{1}{\sqrt{2}}\left(\tan\left(\frac{x}{2}\right) - 1\right)\right) + c$

Answer: B

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388. Evaluate the following integrals:

$\int \frac{dx}{(2\sin x + \cos x + 3)}$

A. $\tan^{-1}\left(\tan\left(\frac{x}{2}\right)+1\right)+c$

B. $2\tan^{-1}\left(\tan\left(\frac{x}{2}\right)+1\right)+c$

C. $\tan^{-1}\left(\tan\left(\frac{x}{2}\right)-1\right)+c$

D. $2\tan^{-1}\left(\tan\left(\frac{x}{2}\right)-1\right)+c$

Answer: A

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389. $\int \frac{dx}{2\sin x-\cos x+3}=$

A. $\tan^{-1}\left(\tan\left(\frac{x}{2}\right)+1\right)+c$

B. $\frac{1}{2}\tan^{-1}\left(\tan\left(\frac{x}{2}\right)+1\right)+c$

C. $\tan^{-1}\left(2\tan\left(\frac{x}{2}\right)+1\right)+c$

D. $2\tan^{-1}\left(\tan\left(\frac{x}{2}\right)+1\right)+c$

Answer: C

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390. $\int \frac{dx}{3 - \cos x - 3\sin x} =$

A. $\log \left| \frac{\tan\left(\frac{x}{2}\right) - 2}{\tan\left(\frac{x}{2}\right) - 1} \right| + c$

B. $\log \left| \frac{\tan\left(\frac{x}{2}\right) - 1}{\tan\left(\frac{x}{2}\right) - 2} \right| + c$

C. $\log \left| \frac{2\tan\left(\frac{x}{2}\right) - 2}{2\tan\left(\frac{x}{2}\right) - 1} \right| + c$

D. $\log \left| \frac{2\tan\left(\frac{x}{2}\right) - 1}{2\tan\left(\frac{x}{2}\right) - 2} \right| + c$

Answer: C

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391. $\int \frac{dx}{3\sin x + 2\cos x + 3} =$

A. $\frac{1}{2}\log\left|\frac{\tan\left(\frac{x}{2}\right)+1}{\tan\left(\frac{x}{2}\right)+5}\right| + c$

B. $\frac{1}{2}\log\left|\frac{\tan\left(\frac{x}{2}\right)+5}{\tan\left(\frac{x}{2}\right)+1}\right| + c$

C. $\frac{1}{4}\log\left|\frac{\tan\left(\frac{x}{2}\right)+1}{\tan\left(\frac{x}{2}\right)+5}\right| + c$

D. $\frac{1}{4}\log\left|\frac{\tan\left(\frac{x}{2}\right)+5}{\tan\left(\frac{x}{2}\right)+1}\right| + c$

Answer: A

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392. $\int \frac{dx}{13 + 3\cos x + 4\sin x} =$

A. $\frac{-1}{6}\tan^{-1}\left(\frac{1}{6}\left(5\tan\left(\frac{x}{2}\right) + 2\right)\right) + c$

B. $\frac{1}{6}\tan^{-1}\left(\frac{1}{6}\left(5\tan\left(\frac{x}{2}\right) + 2\right)\right) + c$

C. $\frac{-1}{12}\tan^{-1}\left(\frac{1}{6}\left(5\tan\left(\frac{x}{2}\right) + 2\right)\right) + c$

D. $\frac{1}{12}\tan^{-1}\left(\frac{1}{6}\left(5\tan\left(\frac{x}{2}\right) + 2\right)\right) + c$

Answer: B

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393. $\int \frac{dx}{\cos a + \cos x} =$

A. $(\operatorname{cosec} a)\log\left|\frac{\cot\left(\frac{a}{2}\right)+\tan\left(\frac{x}{2}\right)}{\cot\left(\frac{a}{2}\right)-\tan\left(\frac{x}{2}\right)}\right|+c$

B. $(\operatorname{cosec} a)\log\left|\frac{\cot\left(\frac{a}{2}\right)-\tan\left(\frac{x}{2}\right)}{\cot\left(\frac{a}{2}\right)+\tan\left(\frac{x}{2}\right)}\right|+c$

C. $(\operatorname{cosec} a)\log\left|\frac{\tan\left(\frac{x}{2}\right)+\tan\left(\frac{a}{2}\right)}{\tan\left(\frac{x}{2}\right)-\tan\left(\frac{a}{2}\right)}\right|+c$

D. $(\operatorname{cosec} a)\log\left|\frac{\tan\left(\frac{x}{2}\right)-\tan\left(\frac{a}{2}\right)}{\tan\left(\frac{x}{2}\right)+\tan\left(\frac{a}{2}\right)}\right|+c$

Answer: A

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394. $\int\frac{dx}{1+\cos a\cos x}=$

A. $\frac{1}{\sin a}\tan^{-1}\left(\tan\left(\frac{x}{2}\right)\tan\left(\frac{a}{2}\right)\right)+c$

B. $\frac{2}{\sin a}\tan^{-1}\left(\tan\left(\frac{x}{2}\right)\tan\left(\frac{a}{2}\right)\right)+c$

C. $\frac{1}{\cos a}\tan^{-1}\left(\tan\left(\frac{x}{2}\right)\tan\left(\frac{a}{2}\right)\right)+c$

D. $\frac{2}{\cos a}\tan^{-1}\left(\tan\left(\frac{x}{2}\right)\cot\left(\frac{a}{2}\right)\right)+c$

Answer: B

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395. $\int\frac{1+\cos\alpha\cos x}{\cos\alpha+\cos x}dx=$

A. $x\cos\alpha-\sin\alpha\log\left|\frac{\cot\left(\frac{\alpha}{2}\right)+\tan\left(\frac{x}{2}\right)}{\cot\left(\frac{\alpha}{2}\right)-\tan\left(\frac{x}{2}\right)}\right|+c$

B. $x\cos\alpha+\sin\alpha\log\left|\frac{\cot\left(\frac{\alpha}{2}\right)+\tan\left(\frac{x}{2}\right)}{\cot\left(\frac{\alpha}{2}\right)-\tan\left(\frac{x}{2}\right)}\right|+c$

C. $x\cos\alpha - \sin\alpha\log\left|\frac{\tan\left(\frac{x}{2}\right)+\tan\left(\frac{\alpha}{2}\right)}{\tan\left(\frac{x}{2}\right)-\tan\left(\frac{\alpha}{2}\right)}\right| + c$

D. $x\cos\alpha + \sin\alpha\log\left|\frac{\tan\left(\frac{x}{2}\right)+\tan\left(\frac{\alpha}{2}\right)}{\tan\left(\frac{x}{2}\right)-\tan\left(\frac{\alpha}{2}\right)}\right| + c$

Answer: B

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396. $\int \frac{1}{1-\sin 2x}dx =$

A. $\frac{-1}{\tan x + 1} + c$

B. $\frac{1}{\tan x + 1} + c$

C. $\frac{-1}{\tan x - 1} + c$

D. $\frac{1}{\tan x - 1} + c$

Answer: C

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397. $\int \frac{dx}{2\sin 2x - 3} =$

A. $\frac{-1}{\sqrt{5}} \tan^{-1}\left(\frac{3\tan x + 2}{\sqrt{5}}\right) + c$

B. $\frac{1}{\sqrt{5}} \tan^{-1}\left(\frac{3\tan x + 2}{\sqrt{5}}\right) + c$

C. $\frac{-1}{\sqrt{5}} \tan^{-1}\left(\frac{3\tan x - 2}{\sqrt{5}}\right) + c$

D. $\frac{1}{\sqrt{5}} \tan^{-1}\left(\frac{3\tan x - 2}{\sqrt{5}}\right) + c$

Answer: C

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398. $\frac{1}{2 - 3\sin 2x}$

A. $\frac{1}{2\sqrt{5}} \log \left| \frac{2\tan x - 3 - \sqrt{5}}{2\tan x - 3 + \sqrt{5}} \right| + c$

B. $\frac{1}{2\sqrt{5}}\log\left|\frac{2\tan x-3+\sqrt{5}}{2\tan x-3-\sqrt{5}}\right|+c$

C. $\frac{1}{\sqrt{5}}\log\left|\frac{2\tan x-3-\sqrt{5}}{2\tan x-3+\sqrt{5}}\right|+c$

D. $\frac{1}{\sqrt{5}}\log\left|\frac{2\tan x-3+\sqrt{5}}{2\tan x-3-\sqrt{5}}\right|+c$

Answer: A

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399. $\frac{1}{3-5\sin 2x}$

A. $\frac{1}{4}\log\left|\frac{3\tan x-9}{3\tan x-1}\right|+c$

B. $\frac{1}{4}\log\left|\frac{3\tan x-1}{3\tan x-9}\right|+c$

C. $\frac{1}{8}\log\left|\frac{3\tan x-9}{3\tan x-1}\right|+c$

D. $\frac{1}{8}\log\left|\frac{3\tan x-1}{3\tan x-9}\right|+c$

Answer: C

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400. $\int \frac{dx}{3 - 2\cos 2x} =$

A. $\frac{1}{\sqrt{5}}\tan^{-1}\left(\frac{\tan x}{\sqrt{5}}\right) + c$

B. $\frac{2}{\sqrt{5}}\tan^{-1}\left(\frac{\tan x}{\sqrt{5}}\right) + c$

C. $\frac{1}{\sqrt{5}}\tan^{-1}\left(\sqrt{5}\tan x\right) + c$

D. $\frac{2}{\sqrt{5}}\tan^{-1}\left(\sqrt{5}\tan x\right) + c$

Answer: C

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401. $\int \frac{dx}{3\cos 2x + 5} =$

A. $\frac{1}{2}\tan^{-1}\left(\frac{\tan x}{2}\right) + c$

B. $\frac{1}{2}\tan^{-1}\left(\frac{\tan x}{4}\right) + c$

C. $\frac{1}{4}\tan^{-1}\left(\frac{\tan x}{2}\right)+c$

D. $\frac{1}{4}\tan^{-1}\left(\frac{\tan x}{4}\right)+c$

Answer: C

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402. $\int \frac{dx}{2-3\cos 2x}$

A. $\frac{1}{2\sqrt{5}}\log\left|\frac{\sqrt{5}\tan x-1}{\sqrt{5}\tan x+1}\right|+c$

B. $\frac{1}{2\sqrt{5}}\log\left|\frac{\sqrt{5}\tan x+1}{\sqrt{5}\tan x-1}\right|+c$

C. $\frac{1}{\sqrt{5}}\log\left|\frac{\sqrt{5}\tan x-1}{\sqrt{5}\tan x+1}\right|+c$

D. $\frac{1}{\sqrt{5}}\log\left|\frac{\sqrt{5}\tan x+1}{\sqrt{5}\tan x-1}\right|+c$

Answer: A

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403. $\int \frac{dx}{3 + 4\cos 2x} =$

A. $\frac{1}{2\sqrt{7}} \log \left| \frac{\sqrt{7} + \tan x}{\sqrt{7} - \tan x} \right| + c$

B. $\frac{1}{2\sqrt{7}} \log \left| \frac{\sqrt{7} - \tan x}{\sqrt{7} + \tan x} \right| + c$

C. $\frac{1}{4\sqrt{7}} \log \left| \frac{\sqrt{7} + \tan x}{\sqrt{7} - \tan x} \right| + c$

D. $\frac{1}{4\sqrt{7}} \log \left| \frac{\sqrt{7} - \tan x}{\sqrt{7} + \tan x} \right| + c$

Answer: A

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404. $\int \frac{dx}{5 + 7\cos 2x} =$

A. $\frac{1}{2\sqrt{6}} \log \left| \frac{\sqrt{6} - \tan x}{\sqrt{6} + \tan x} \right| + c$

B. $\frac{1}{2\sqrt{6}} \log \left| \frac{\sqrt{6} + \tan x}{\sqrt{6} - \tan x} \right| + c$

C. $\frac{1}{4\sqrt{6}}\log\left|\frac{\sqrt{6}-\tan x}{\sqrt{6}+\tan x}\right|+c$

D. $\frac{1}{4\sqrt{6}}\log\left|\frac{\sqrt{6}+\tan x}{\sqrt{6}-\tan x}\right|+c$

Answer: D

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405. $\int\frac{dx}{3+2\sin 2x+4\cos 2x}=$

A. $\frac{1}{2\sqrt{11}}\log\left|\frac{\sqrt{11}+2-\tan x}{\sqrt{11}-2+\tan x}\right|+c$

B. $\frac{1}{2\sqrt{11}}\log\left|\frac{\sqrt{11}-2+\tan x}{\sqrt{11}+2-\tan x}\right|+c$

C. $\frac{2}{\sqrt{11}}\log\left|\frac{\sqrt{11}+2-\tan x}{\sqrt{11}-2+\tan x}\right|+c$

D. $\frac{2}{\sqrt{11}}\log\left|\frac{\sqrt{11}-2+\tan x}{\sqrt{11}+2-\tan x}\right|+c$

Answer: B

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406. $\int \frac{dx}{1+\sin^2 x} =$

A. $\frac{1}{2}\tan^{-1}(2\tan x) + c$

B. $\frac{-1}{2}\tan^{-1}(2\tan x) + c$

C. $2\tan^{-1}(2\tan x) + c$

D. $-2\tan^{-1}(2\tan x) + c$

Answer: A

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407. $\int \frac{dx}{a^2 + b^2\cos^2 x} =$

A. $\frac{1}{b\sqrt{a^2+b^2}}\tan^{-1}\left(\frac{b\tan x}{\sqrt{a^2+b^2}}\right) + c$

B. $\frac{-1}{b\sqrt{a^2+b^2}}\tan^{-1}\left(\frac{b\tan x}{\sqrt{a^2+b^2}}\right) + c$

C. $\frac{1}{a\sqrt{a^2+b^2}}\tan^{-1}\left(\frac{a\tan x}{\sqrt{a^2+b^2}}\right)+c$

D. $\frac{-1}{a\sqrt{a^2+b^2}}\tan^{-1}\left(\frac{a\tan x}{\sqrt{a^2+b^2}}\right)+c$

Answer: C

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408. $\int\frac{dx}{3+2\cos^2 x}$

A. $\frac{1}{\sqrt{15}}\cot^{-1}\left(\frac{\sqrt{3}\tan x}{\sqrt{5}}\right)+c$

B. $\frac{1}{\sqrt{15}}\tan^{-1}\left(\frac{\sqrt{3}\tan x}{\sqrt{5}}\right)+c$

C. $\frac{1}{\sqrt{5}}\frac{\cot^{-1}(\tan x)}{\sqrt{5}}\Bigg)+c$

D. $\frac{1}{\sqrt{5}}\frac{\tan^{-1}(\tan x)}{\sqrt{5}}\Bigg)+c$

Answer: B

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409. $\int \frac{dx}{4+5\cos^2 x} =$

A. $\frac{1}{6}\tan^{-1}\left(\frac{2\tan x}{3}\right)+c$

B. $\frac{1}{3}\tan^{-1}\left(\frac{2\tan x}{3}\right)+c$

C. $\frac{2}{3}\tan^{-1}\left(\frac{2\tan x}{3}\right)+c$

D. $\frac{1}{12}\tan^{-1}\left(\frac{2\tan x}{3}\right)+c$

Answer: A

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410. $\int \frac{dx}{a^2\sin^2 x + b^2\cos^2 x} =$

A. $\frac{-1}{ab}\tan^{-1}\left(\frac{b\tan x}{a}\right)+c$

B. $\frac{1}{ab}\tan^{-1}\left(\frac{b\tan x}{a}\right)+c$

C. $\frac{-1}{ab}\tan^{-1}\left(\frac{a\tan x}{b}\right)+c$

D. $\frac{1}{ab}\tan^{-1}\left(\frac{a\tan x}{b}\right)+c$

Answer: D

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411. Evaluate: $\int \frac{1}{1+3\sin^2 x+8\cos^2 x}\,dx$

A. $\frac{1}{2}\tan^{-1}\left(\frac{2\tan x}{3}\right)+c$

B. $\frac{1}{3}\tan^{-1}\left(\frac{2\tan x}{3}\right)+c$

C. $\frac{1}{6}\tan^{-1}\left(\frac{2\tan x}{3}\right)+c$

D. $\frac{1}{12}\tan^{-1}\left(\frac{2\tan x}{3}\right)+c$

Answer: C

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412. Evaluate: $\int \frac{1}{\cos 2x + 3\sin^2 x}\, dx$

A. $\frac{1}{\sqrt{2}} \tan^{-1}\left(\sqrt{2}\tan x\right) + c$

B. $\frac{-1}{\sqrt{2}} \tan^{-1}\left(\sqrt{2}\tan x\right) + c$

C. $\frac{1}{2\sqrt{2}} \tan^{-1}\left(\sqrt{2}\tan x\right) + c$

D. $\frac{-1}{2\sqrt{2}} \tan^{-1}\left(\sqrt{2}\tan x\right) + c$

Answer: A

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413. Evaluate: $\int \frac{1}{\sin^2 x + \sin 2x} dx$

A. $\frac{1}{2} \log \left| \frac{\tan x}{\tan x - 2} \right| + c$

B. $\frac{1}{2} \log \left| \frac{\tan x}{\tan x + 2} \right| + c$

C. $\frac{1}{4} \log \left| \frac{\tan x}{\tan x - 2} \right| + c$

D. $\frac{1}{4}\log\left|\frac{\tan x}{\tan x+2}\right|+c$

Answer: B

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414. Evaluate: $\int\frac{\cos x}{\cos 3x}dx$

A. $\frac{1}{\sqrt{3}}\log\left|\frac{1-\sqrt{3}\tan x}{1+\sqrt{3}\tan x}\right|+c$

B. $\frac{1}{\sqrt{3}}\log\left|\frac{1+\sqrt{3}\tan x}{1-\sqrt{3}\tan x}\right|+c$

C. $\frac{1}{2\sqrt{3}}\log\left|\frac{1-\sqrt{3}\tan x}{1+\sqrt{3}\tan x}\right|+c$

D. $\frac{1}{2\sqrt{3}}\log\left|\frac{1+\sqrt{3}\tan x}{1-\sqrt{3}\tan x}\right|+c$

Answer: D

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415. Evaluate: $\int \frac{\sin x}{\sin 3x} dx$.

A. $\frac{1}{\sqrt{3}} \log \left| \frac{\sqrt{3} - \tan x}{\sqrt{3} + \tan x} \right| + c$

B. $\frac{1}{2\sqrt{3}} \log \left| \frac{\sqrt{3} - \tan x}{\sqrt{3} + \tan x} \right| + c$

C. $\frac{1}{\sqrt{3}} \log \left| \frac{\sqrt{3} + \tan x}{\sqrt{3} - \tan x} \right| + c$

D. $\frac{1}{2\sqrt{3}} \log \left| \frac{\sqrt{3} + \tan x}{\sqrt{3} - \tan x} \right| + c$

Answer: D

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416. If $\int f(x)dx = g(x)$, then : $\int f^{-1}(x)dx =$

A. $g^{-1}(x)$

B. $f^{-1}(x)$

C. $xf^{-1}(x) - g^{-1}(x)$

D. $xf^{-1}(x) - g\left(f^{-1}(x)\right)$

Answer: D

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417. Evaluate $\int \left[f(x)g^n(x) - f^n(x)g(x)\right]dx$

A. $f(x)g'(x) - f'(x)g(x)$

B. $f(x)g'(x) + f'(x)g(x)$

C. $f'(x)g(x) - f(x)g'(x)$

D. $\dfrac{f(x)}{g'(x)}$

Answer: A

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418. If $\int xf(x)dx = \dfrac{f(x)}{2}$, then $f(x)$ is equal to

A. e^x

B. e^{-x}

C. $\log x$

D. e^{x^2}

Answer: D

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419. $\int x \sin x dx =$

A. $\cos x + x \sin x + c$

B. $\cos x - x \sin x + c$

C. $\sin x + x \cos x + c$

D. $\sin x - x \cos x + c$

Answer: D

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420. $\int x\sin 2x dx =$

A. $\frac{\sin 2x}{4} - \frac{x\sin 2x}{2} + c$

B. $\frac{\sin 2x}{4} - \frac{x\cos 2x}{2} + c$

C. $\frac{\cos 2x}{4} + \frac{x\sin 2x}{2} + c$

D. $\frac{\sin 2x}{4} + \frac{x\cos 2x}{2} + c$

Answer: B

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421. $\int x\sin 5x\sin 2x dx =$

A. $\frac{x\sin 3x}{6} + \frac{\cos 3x}{18} + \frac{x\sin 7x}{14} - \frac{\cos 7x}{98} + c$

B. $\frac{x\sin 3x}{6} + \frac{\cos 3x}{18} - \frac{x\sin 7x}{14} + \frac{\cos 7x}{98} + c$

C. $\frac{x\sin 3x}{6} + \frac{\cos 3x}{18} - \frac{x\sin 7x}{14} - \frac{\cos 7x}{98} + c$

D. $\frac{x\sin 3x}{6} + \frac{\cos 3x}{18} + \frac{x\sin 7x}{14} + \frac{\cos 7x}{98} + c$

Answer: C

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422. Evaluate the following integrals:

$\int x\sin^2 x dx$

A. $\frac{x^2}{4} + \frac{x\sin 2x}{4} + \frac{\cos 2x}{8} + c$

B. $\frac{x^2}{4} + \frac{x\sin 2x}{4} - \frac{\cos 2x}{8} + c$

C. $\frac{x^2}{4} - \frac{x\sin 2x}{4} + \frac{\cos 2x}{8} + c$

D. $\frac{x^2}{4} - \frac{x\sin 2x}{4} - \frac{\cos 2x}{8} + c$

Answer: D

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423. $\int x\tan^2 x dx =$

A. $x\tan x + \log|\sec x| + \frac{x^2}{2} + c$

B. $x\tan x + \log|\sec x| - \frac{x^2}{2} + c$

C. $x\tan x - \log|\sec x| - \frac{x^2}{2} + c$

D. $x\tan x - \log|\sec x| + \frac{x^2}{2} + c$

Answer: C

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424. $\int x\cot^2 x dx = ?$

A. $\log|\sin x| + x\tan x + \frac{x^2}{2} + c$

B. $\log|\sin x| - x\tan x + \frac{x^2}{2} + c$

C. $\log|\sin x| + x\cot x - \frac{x^2}{2} + c$

D. $\log|\sin x| - x\cot x - \frac{x^2}{2} + c$

Answer: D

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425. Evaluate: $\int x^2 \sin x \, dx$

A. $\left(x^2 - 2\right)\cos x + 2x\sin x + c$

B. $\left(x^2 - 2\right)\cos x - 2x\sin x + c$

C. $\left(2 - x^2\right)\cos x + 2x\sin x + c$

D. $\left(2 - x^2\right)\cos x - 2x\sin x + c$

Answer: C

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426. Evaluate the following integrals:

$\int x \sin^{-1} x dx$

A. $\frac{x^2\sin^{-1}x}{2}+\frac{x\sqrt{1-x^2}}{4}+\frac{\sin^{-1}x}{4}+c$

B. $\frac{x^2\sin^{-1}x}{2}-\frac{x\sqrt{1-x^2}}{4}-\frac{\sin^{-1}x}{4}+c$

C. $\frac{x^2\sin^{-1}x}{2}-\frac{x\sqrt{1-x^2}}{4}+\frac{\sin^{-1}x}{4}+c$

D. $\frac{x^2\sin^{-1}x}{2}+\frac{x\sqrt{1-x^2}}{4}-\frac{\sin^{-1}x}{4}+c$

Answer: D

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427. Evaluate : $\int x\tan^{-1}xdx$

A. $\frac{x^2\tan^{-1}x}{2}+\frac{x}{2}+\frac{\tan^{-1}x}{2}+c$

B. $\frac{x^2\tan^{-1}x}{2}-\frac{x}{2}-\frac{\tan^{-1}x}{2}+c$

C. $\frac{x^2\tan^{-1}x}{2}+\frac{x}{2}-\frac{\tan^{-1}x}{2}+c$

D. $\frac{x^2\tan^{-1}x}{2}-\frac{x}{2}+\frac{\tan^{-1}x}{2}+c$

Answer: D

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428. $\int x\sec^{-1}x dx =$

A. $\frac{x^2\sec^{-1}x}{2} - \left(\frac{\sqrt{x^2-1}}{2}\right) + c$

B. $\frac{x^2\sec^{-1}x}{2} + \left(\frac{\sqrt{x^2-1}}{2}\right) + c$

C. $\frac{x^2\sec^{-1}x}{2} - \left(\frac{\sqrt{x^2-1}}{4}\right) + c$

D. $\frac{x^2\sec^{-1}x}{2} + \left(\frac{\sqrt{x^2-1}}{4}\right) + c$

Answer: A

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429. Evaluate the following integrals:

$\int x^2 e^{3x} dx$

A. $\frac{e^{3x}}{9}\left(9x^2 + 6x + 2\right) + c$

B. $\frac{e^{3x}}{9}\left(9x^2 - 6x + 2\right) + c$

C. $\frac{e^{3x}}{27}\left(9x^2 + 6x + 2\right) + c$

D. $\frac{e^{3x}}{27}\left(9x^2 - 6x + 2\right) + c$

Answer: D

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430. $\int e^{-2x} x dx =$

A. $\frac{e^{-2x}}{4}(2x + 1) + c$

B. $\frac{-e^{-2x}}{4}(2x + 1) + c$

C. $\frac{e^{-2x}}{2}(2x + 1) + c$

D. $\frac{-e^{-2x}}{2}(2x+1)+c$

Answer: B

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431. $\int x\log x dx = ?$

A. $\frac{x^2}{4}(2\log x - 1)+c$

B. $\frac{x^2}{4}(2\log x + 1)+c$

C. $\frac{x^2}{2}(\log x - 1)+c$

D. $\frac{x^2}{2}(\log x + 1)+c$

Answer: A

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432. $\int x^3\log x dx =$

A. $\frac{x^4}{4}(\log x - 1) + c$

B. $\frac{x^4}{4}(4\log x - 1) + c$

C. $\frac{x^4}{16}(\log x - 1) + c$

D. $\frac{x^4}{16}(4\log x - 1) + c$

Answer: D

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433. $\int \frac{\log x}{(x+1)^2} dx =$

A. $\frac{-\log x}{x+1} + \log|x| - \log|x+1| + c$

B. $\frac{\log x}{x+1} - \log|x| - \log|x+1| + c$

C. $\frac{\log x}{x+1} + \log|x| - \log|x+1| + c$

D. $\frac{-\log x}{x+1} - \log|x| - \log|x+1| + c$

Answer: A

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434. Evaluate $\int \frac{\log x}{(1+x)^3} dx$

A. $\frac{1}{2(1+x)} + \frac{1}{2}\log\left|\frac{x}{1+x}\right| - \frac{\log x}{2(1+x)^2} + c$

B. $\frac{1}{2(1+x)} - \frac{1}{2}\log\left|\frac{x}{1+x}\right| + \frac{\log x}{2(1+x)^2} + c$

C. $\frac{1}{2(1+x)} - \frac{1}{2}\log\left|\frac{x}{1+x}\right| - \frac{\log x}{2(1+x)^2} + c$

D. $\frac{1}{2(1+x)} + \frac{1}{2}\log\left|\frac{x}{1+x}\right| + \frac{\log x}{2(1+x)^2} + c$

Answer: A

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435. $\int \frac{\log x}{x^3} dx =$

A. $\frac{1}{4x^2}(2\log x - 1) + c$

B. $\frac{-1}{4x^2}(2\log x + 1) + c$

C. $\frac{1}{4x^2}(2\log x + 1) + c$

D. $\frac{1}{4x^2}(1 - 2\log x) + c$

Answer: B

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436. If $\int \sin^{-1} x dx = x\sin^{-1} x + u + c$, then $u =$

A. $x\sin^{-1} x - \sqrt{1 - x^2} + c$

B. $x\sin^{-1} x + 2\sqrt{1 - x^2} + c$

C. $x\sin^{-1} x - 2\sqrt{1 - x^2} + c$

D. $x\sin^{-1} x + \sqrt{1 - x^2} + c$

Answer: D

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437. $\int \cos^{-1} x dx =$

A. $x\cos^{-1} x - 2\sqrt{1 - x^2} + c$

B. $x\cos^{-1} x + 2\sqrt{1 - x^2} + c$

C. $x\cos^{-1} x - \sqrt{1 - x^2} + c$

D. $x\cos^{-1} x + \sqrt{1 - x^2} + c$

Answer: C

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438. $\int \tan^{-1} x dx = \ldots. + C$

A. $x\tan^{-1} x + \frac{1}{2}\log\left|1 + x^2\right| + c$

B. $x\tan^{-1} x - \frac{1}{2}\log\left|1 + x^2\right| + c$

C. $x\tan^{-1} x + \frac{1}{4}\log\left|1 + x^2\right| + c$

D. $x\tan^{-1} x - \frac{1}{4}\log\left|1 + x^2\right| + c$

Answer: B

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439. $\int \sec^{-1} x dx =$

A. $x\sec^{-1}x - \log\left|x - \sqrt{x^2 - 1}\right| + c$

B. $x\sec^{-1}x + \log\left|x - \sqrt{x^2 - 1}\right| + c$

C. $x\sec^{-1}x - \log\left|x + \sqrt{x^2 - 1}\right| + c$

D. $x\sec^{-1}x + \log\left|x + \sqrt{x^2 - 1}\right| + c$

Answer: C

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440. $\int \log x dx = ?$

A. $x(\log x - 1) + c$

B. $x(\log x + 1) + c$

C. $x\log x - 1 + c$

D. $x\log x + 1 + c$

Answer: A

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441. $\int \log\left(x + \sqrt{a^2 + x^2}\right) dx$

A. $x\log\left(x + \sqrt{x^2 + a^2}\right) - 2\sqrt{x^2 + a^2} + c$

B. $x\log\left(x + \sqrt{x^2 + a^2}\right) + 2\sqrt{x^2 + a^2} + c$

C. $x\log\left(x + \sqrt{x^2 + a^2}\right) - \sqrt{x^2 + a^2} + c$

D. $x\log\left(x + \sqrt{x^2 + a^2}\right) + \sqrt{x^2 + a^2} + c$

Answer: C

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442. $\int \frac{x}{1+\cos 2x} dx$

A. $x\tan x + \log|\sec x| + c$

B. $x\tan x - \log|\sec x| + c$

C. $\frac{1}{2}(x\tan x + \log|\sec x|) + c$

D. $\frac{1}{2}(x\tan x - \log|\sec x|) + c$

Answer: D

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443. $\int \frac{x}{1-\cos x} dx =$

A. $x\cot\left(\frac{x}{2}\right) + 2\log\left|\sin\left(\frac{x}{2}\right)\right| + c$

B. $x\cot\left(\frac{x}{2}\right) - 2\log\left|\sin\left(\frac{x}{2}\right)\right| + c$

C. $-x\cot\left(\frac{x}{2}\right) + 2\log\left|\sin\left(\frac{x}{2}\right)\right| + c$

D. $-x\cot\left(\frac{x}{2}\right) - 2\log\left|\sin\left(\frac{x}{2}\right)\right| + c$

Answer: C

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444. $\int \frac{x + \sin x}{1 - \cos x} dx =$

A. $4\log\left|\sin\left(\frac{x}{2}\right)\right| + x\cot\left(\frac{x}{2}\right) | + c$

B. $4\log\left|\sin\left(\frac{x}{2}\right)\right| - x\cot\left(\frac{x}{2}\right) | + c$

C. $2\log\left|\sin\left(\frac{x}{2}\right)\right| + x\cot\left(\frac{x}{2}\right) | + c$

D. $2\log\left|\sin\left(\frac{x}{2}\right)\right| - x\cot\left(\frac{x}{2}\right) | + c$

Answer: B

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445. Evaluate the following integrals:

$$\int \frac{x}{(1+\sin x)} dx$$

A. $x(\tan x + \sec x) + \log|1 + \sin x| + c$

B. $x(\tan x + \sec x) - \log|1 + \sin x| + c$

C. $x(\tan x - \sec x) + \log|1 + \sin x| + c$

D. $x(\tan x - \sec x) - \log|1 + \sin x| + c$

Answer: C

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446. $\int \frac{x}{1 - \sin 2x} dx =$

A. $\frac{x}{4}(\tan 2x + \sec 2x) - \frac{1}{2}\log\left|\sec^2 2x + \sec 2x \tan 2x\right| + c$

B. $\frac{x}{4}(\tan 2x + \sec 2x) + \frac{1}{2}\log\left|\sec^2 2x + \sec 2x \tan 2x\right| + c$

C. $\frac{x}{2}(\tan 2x + \sec 2x) - \frac{1}{4}\log\left|\sec^2 2x + \sec 2x \tan 2x\right| + c$

D. $\frac{x}{2}(\tan 2x + \sec 2x) + \frac{1}{4}\log\left|\sec^2 2x + \sec 2x \tan 2x\right| + c$

Answer: C

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447. Evaluate $\int \sec^3 x dx$

A. $\sec x \tan x + \log|\sec x + \tan x| + c$

B. $\sec x \tan x - \log|\sec x + \tan x| + c$

C. $\frac{1}{2}(\sec x \tan x + \log|\sec x + \tan x|) + c$

D. $\frac{1}{2}(\sec x \tan x - \log|\sec x + \tan x|) + c$

Answer: C

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448. Evaluate: $\int \operatorname{cosec}^3 x dx$

A. $\frac{1}{2}(\log|\sec x - \cot x| + \sec x \cot x) + c$

B. $\frac{1}{2}(\log|\sec x - \cot x| - \sec x \cot x) + c$

C. $\frac{1}{4}(\log|\sec x - \cot x| + \sec x \cot x) + c$

D. $\frac{1}{4}(\log|\sec x - \cot x| - \sec x \cot x) + c$

Answer: B

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449. If $\int \ln\left(x^2 + x\right)dx = x\ln\left(x^2 + x\right) + A$, then $A =$

A. $\log(x + 1) + 2x + c$

B. $2x - \log(x + 1) + c$

C. $\log(x + 1) - 2x + c$

D. $-2x - \log(x + 1) + c$

Answer: C

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450. $\int \left[\log(\log x) + \frac{1}{(\log x)^2}\right] dx$ ज्ञात कीजिए!

A. $x\log(\log x) + \frac{x}{\log x} + c$

B. $x\log(\log x) - \frac{x}{\log x} + c$

C. $x\log(\log x) + \frac{1}{\log x} + c$

D. $x\log(\log x) - \frac{1}{\log x} + c$

Answer: B

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451. Evaluate: $\int e^{ax}\sin(bx + c)\, dx$

A. $\frac{e^{ax}}{a^2 + b^2}(a\sin(bx + c) - b\cos(bx + c)) + c_1$

B. $\frac{e^{ax}}{a^2 + b^2}(a\sin(bx + c) + b\cos(bx + c)) + c_1$

C. $\frac{e^{ax}}{a^2 + b^2}(a\cos(bx + c) - b\sin(bx + c)) + c_1$

D. $\frac{e^{ax}}{a^2+b^2}(a\cos(bx+c)+b\sin(bx+c))+c_1$

Answer: A

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452. $\int e^{ax}\cos(bx+c)dx$

A. $\frac{e^{ax}}{a^2+b^2}(a\sin(bx+c)-b\cos(bx+c))+c_1$

B. $\frac{e^{ax}}{a^2+b^2}(a\sin(bx+c)+b\cos(bx+c))+c_1$

C. $\frac{e^{ax}}{a^2+b^2}(a\cos(bx+c)-b\sin(bx+c))+c_1$

D. $\frac{e^{ax}}{a^2+b^2}(a\cos(bx+c)+b\sin(bx+c))+c_1$

Answer: D

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453. If $\int e^x \sin x dx = \frac{u}{2}e^x + c$, then `u=

A. $\frac{e^x}{2}(\sin x + \cos x + c)$

B. $\frac{-e^x}{2}(\sin x + \cos x + c)$

C. $\frac{e^x}{2}(\sin x - \cos x + c)$

D. $\frac{-e^x}{2}(\sin x - \cos x + c)$

Answer: C

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454. $\int e^{5x}\cos 2x \cos x dx =$

A. $\frac{e^{5x}}{4}\left(\frac{5\cos 3x + \sin 3x}{34} + \frac{5\cos x + \sin x}{26}\right) + c$

B. $\frac{e^{5x}}{4}\left(\frac{5\cos 3x + \sin 3x}{34} - \frac{5\cos x + \sin x}{26}\right) + c$

C. $\frac{e^{5x}}{2}\left(\frac{5\cos 3x + \sin 3x}{34} + \frac{5\cos x + \sin x}{26}\right) + c$

D. $\frac{e^{5x}}{2}\left(\frac{5\cos 3x + \sin 3x}{34} - \frac{5\cos x + \sin x}{26}\right) + c$

Answer: C

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455. $\int \cos\sqrt{x}dx = ?$

A. $2\sqrt{x}\cos\sqrt{x} - 2\sin\sqrt{x} + c$

B. $2\sqrt{x}\cos\sqrt{x} + 2\sin\sqrt{x} + c$

C. $2\sqrt{x}\sin\sqrt{x} - 2\cos\sqrt{x} + c$

D. $2\sqrt{x}\sin\sqrt{x} + 2\cos\sqrt{x} + c$

Answer: D

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456. $\int \sin(\log x)dx =$

A. $\frac{x}{2}(\cos(\log x) - \sin(\log x)) + c$

B. $\frac{x}{2}(\sin(\log x) - \cos(\log x)) + c$

C. $\frac{x}{2}(\cos(\log x) + \sin(\log x)) + c$

D. $\frac{-x}{2}(\sin(\log x) + \cos(\log x)) + c$

Answer: B

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457. $\int \sin x \log(\cos x) dx = ?$

A. $\cos x(1 - \log|\cos x|) + c$

B. $\cos x(1 + \log|\cos x|) + c$

C. $\sin x(1 - \log|\cos x|) + c$

D. $\sin x(1 + \log|\cos x|) + c$

Answer: A

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458. $\int e^{\sqrt{x}} dx = ?$

A. $2e^{\sqrt{x}}\left(\sqrt{x}-1\right)+c$

B. $2e^{\sqrt{x}}\left(\sqrt{x}+1\right)+c$

C. $e^{\sqrt{x}}\left(\sqrt{x}-1\right)+c$

D. $e^{\sqrt{x}}\left(\sqrt{x}+1\right)+c$

Answer: A

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459. $\int e^{\sqrt{x}}\sqrt{x}dx=$

A. $2\sqrt{x}-e^{\sqrt{x}}-4\sqrt{x}e^{\sqrt{x}}+c$

B. $\left(2x-4\sqrt{x}+4\right)e^{\sqrt{x}}+c$

C. $\left(2x+4\sqrt{x}+4\right)e^{\sqrt{x}}+c$

D. $\left(1-4\sqrt{x}\right)e^{\sqrt{x}}+c$

Answer: B

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460. $\int \frac{\sqrt{x^2+1}\left[\log\left(x^2+1\right)-2\log x\right]}{x^4}dx$ is equal to

A. $\frac{1}{3}\left(1+\frac{1}{x^2}\right)^{\frac{3}{2}}\left(\frac{2}{3}+\log\left(1+\frac{1}{x^2}\right)\right)+c$

B. $\frac{1}{3}\left(1+\frac{1}{x^2}\right)^{\frac{3}{2}}\left(\frac{2}{3}-\log\left(1+\frac{1}{x^2}\right)\right)+c$

C. $\frac{2}{3}\left(1+\frac{1}{x^2}\right)^{\frac{3}{2}}\left(\frac{1}{3}+\log\left(1+\frac{1}{x^2}\right)\right)+c$

D. $\frac{2}{3}\left(1+\frac{1}{x^2}\right)^{\frac{3}{2}}\left(\frac{1}{3}-\log\left(1+\frac{1}{x^2}\right)\right)+c$

Answer: B

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461. Evaluate the following integrals:

$\int \frac{\log(\log x)}{x}dx$

A. $\log x(\log x + 1) + c$

B. $\log x(\log x - 1) + c$

C. $\log x(\log(\log x) + 1) + c$

D. $\log x(\log(\log x) - 1) + c$

Answer: D

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462. $\int x^3 e^{x^2} dx$

A. $\frac{e^{x^2}}{2}\left(x^2 - 1\right) + c$

B. $\frac{e^{x^2}}{2}\left(x^2 + 1\right) + c$

C. $\frac{e^{x^2}}{2}\left(2x^2 - 1\right) + c$

D. $\frac{e^{x^2}}{2}\left(2x^2 + 1\right) + c$

Answer: A

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463. $\int\left(\log(1+\cos x)-x\tan\left(\frac{x}{2}\right)\right)dx=$

A. $-x\log(1+\cos x)+c$

B. $x\log(1+\cos x)+c$

C. $\frac{-x}{2}\log(1+\cos x)+c$

D. $\frac{x}{2}\log(1+\cos x)+c$

Answer: B

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464. Evaluate the following integrals:

$\int\cos^{-1}\sqrt{x}dx$

A. $x\cos^{-1}\sqrt{x}-\frac{1}{2}\sqrt{x-x^2}+\frac{1}{2}\sin^{-1}\sqrt{x}+c$

B. $x\cos^{-1}\sqrt{x}+\frac{1}{2}\sqrt{x-x^2}-\frac{1}{2}\sin^{-1}\sqrt{x}+c$

C. $x\cos^{-1}\sqrt{x} - \frac{1}{2}\sqrt{x - x^2} - \frac{1}{2}\sin^{-1}\sqrt{x} + c$

D. $x\cos^{-1}\sqrt{x} + \frac{1}{2}\sqrt{x - x^2} + \frac{1}{2}\sin^{-1}\sqrt{x} + c$

Answer: A

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465. $\int \tan^{-1}\sqrt{x}dx$ is equal to

A. $x + \tan^{-1}\sqrt{x} + \sqrt{x} + c$

B. $x + \tan^{-1}\sqrt{x} - \sqrt{x} + c$

C. $(x + 1)\tan^{-1}\sqrt{x} + \sqrt{x} + c$

D. $(x + 1)\tan^{-1}\sqrt{x} - \sqrt{x} + c$

Answer: D

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466. Evaluate: $\int \frac{\sin^{-1}\sqrt{x} - \cos^{-1}\sqrt{x}}{\sin^{-1}\sqrt{x} + \cos^{-1}\sqrt{x}}\, dx$

A. $\frac{4}{\pi}\left(\sqrt{x - x^2} + (1 - 2x)\sin^{-1}\sqrt{x}\right) - x + c$

B. $\frac{4}{\pi}\left(\sqrt{x - x^2} - (1 - 2x)\sin^{-1}\sqrt{x}\right) - x + c$

C. $\frac{2}{\pi}\left(\sqrt{x - x^2} + (1 - 2x)\sin^{-1}\sqrt{x}\right) - x + c$

D. $\frac{2}{\pi}\left(\sqrt{x - x^2} - (1 - 2x)\sin^{-1}\sqrt{x}\right) - x + c$

Answer: D

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467. $\int \frac{x\sin^{-1}x}{\sqrt{1 - x^2}dx}$

A. $\cos\left(\sin^{-1}x\right) + x\sin^{-1}x + c$

B. $-\cos\left(\sin^{-1}x\right) + x\sin^{-1}x + c$

C. $\left(\sin^{-1}x\right)\cos\left(\sin^{-1}x\right) + x + c$

D. $-\left(\sin^{-1}x\right)\cos\left(\sin^{-1}x\right)+x+c$

Answer: D

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468. If $I_1=\int\sin^{-1}xdx$ and $I_2\sin^{-1}\sqrt{-x^2}dx$, then

A. $I_1=I_2$

B. $I_2=\frac{\pi}{2}I_1$

C. $I_1+I_2=\frac{\pi x}{2}$

D. $I_1-I_2=\frac{\pi x}{2}$

Answer: C

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469. $\int\cot^{-1}\left(1-x+x^2\right)dx=$

A. $x\tan^{-1}x + (1-x)\tan^{-1}(1-x) + \frac{1}{2}\log\left|1+x^2\right| + \frac{1}{2}\log\left|1+\left(1-x^2\right)\right| + c$

B. $x\tan^{-1}x - (1-x)\tan^{-1}(1-x) + \frac{1}{2}\log\left|1+x^2\right| + \frac{1}{2}\log\left|1+\left(1-x^2\right)\right| + c$

C. $x\tan^{-1}x - (1-x)\tan^{-1}(1-x) - \frac{1}{2}\log\left|1+x^2\right| + \frac{1}{2}\log\left|1+\left(1-x^2\right)\right| + c$

D. $x\tan^{-1}x - (1-x)\tan^{-1}(1-x) + \frac{1}{2}\log\left|1+x^2\right| - \frac{1}{2}\log\left|1+\left(1-x^2\right)\right| + c$

Answer: C

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470. if $d\frac{f(x)}{dx} = x\cos x + \sin x$ and $f(0) = 2$ then find $f(x) = ?$

A. $x\sin x$

B. $x\cos x + \sin x + 2$

C. $x\sin x + 2$

D. $x\cos x + 2$

Answer: C

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471. Q12) If the antiderivative of f(x) is e' and antiderivative of g (x) is cos x,then $\int f(x)\cos x dx + \int g(x)e^x dx$

A. $f(x)g(x) + c$

B. $f(x) + g(x) + c$

C. $e^x \cos x + c$

D. $-e^x \cos x + c$

Answer: C

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472. $\int e^x \left(1 + \tan x + \tan^2 x\right) dx =$

A. $e^x \tan x + c$

B. $-e^x \tan x + c$

C. $e^x(1 + \tan x) + c$

D. $-e^x|\log\sin x| + c$

Answer: A

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473. $\int e^x\left(\cot x - 1 - \cot^2 x\right)dx =$

A. $e^x\cot x + c$

B. $-e^x\cot x + c$

C. $e^x\cot^2 x + c$

D. $-e^x\cot^2 x + c$

Answer: A

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474. $\int e^x \sec x(1 + \tan x)dx = ?$

A. $e^x \cot x + c$

B. $e^x \tan x + c$

C. $e^x \sec x + c$

D. $e^x \cos x + c$

Answer: C

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475. $\int e^x(\tan x + \log \sec x)dx = ?$

A. $-e^x \tan x + c$

B. $e^x \tan x + c$

C. $-e^x \log(\sec x) + c$

D. $e^x \log(\sec x) + c$

Answer: D

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476. $\int e^x(\cot x + \log\sin x)dx = ?$

A. $-e^x\cot x + c$

B. $-e^x\log(\sin x) + c$

C. $e^x\cot x + c$

D. $e^x\log(\sin x) + c$

Answer: D

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477. $\int e^x\left(\frac{\cos x - \sin x}{\sin^2 x}\right)dx =$

A. $e^x\operatorname{cosec} x + c$

B. $-e^x \operatorname{cosec} x + c$

C. $e^x \sec x + c$

D. $-e^x \sec x + c$

Answer: B

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478. If $\int e^x \left(\frac{1 - \sin x}{1 - \cos x} \right) dx = f(x) +$ Constant, then f(x) is equal to

A. $e^x \cot\left(\frac{x}{2}\right) + c$

B. $-e^x \cot\left(\frac{x}{2}\right) + c$

C. $2e^x \cot\left(\frac{x}{2}\right) + c$

D. $-2e^x \cot\left(\frac{x}{2}\right) + c$

Answer: B

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479. $\int e^x \left(\frac{1 + \sin x}{1 + \cos x} \right) dx = ?$

A. $e^x \tan\left(\frac{x}{2}\right) + c$

B. $e^x \cot\left(\frac{x}{2}\right) + c$

C. $2e^x \tan\left(\frac{x}{2}\right) + c$

D. $-2e^x \cot\left(\frac{x}{2}\right) + c$

Answer: A

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480. Evaluate: $\int e^x \left(\frac{2 + \sin 2x}{1 + \cos 2x} \right) dx$

A. $e^x \cot x + c$

B. $e^x \tan x + c$

C. $e^x \sin x + c$

D. $e^x \cos x + c$

Answer: B

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481. Evaluate the following integrals:

$$\int e^x \left(\frac{2 - \sin 2x}{1 - \cos 2x} \right) dx$$

A. $e^x \tan x + c$

B. $-e^x \tan x + c$

C. $e^x \cot x + c$

D. $-e^x \cot x + c$

Answer: D

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482. Evaluate: $\int e^x \left(\frac{1 + \sin x \cos x}{\cos^2 x} \right) dx$

A. $e^x \cot x + c$

B. $-e^x \cot x + c$

C. $e^x \tan x + c$

D. $-e^x \tan x + c$

Answer: C

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483. Evaluate: $\int e^x \frac{\sqrt{1 - x^2} \sin^{-1} x + 1}{\sqrt{1 - x^2}} dx$

A. $e^x \sin^{-1} x + c$

B. $-e^x \sin^{-1} x + c$

C. $\frac{e^x}{\sqrt{1 - x^2}} + c$

D. $\frac{-e^x}{\sqrt{1-x^2}} + c$

Answer: A

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484. $\int e^x \left(\frac{1 + x\log x}{x} \right) dx = ?$

A. $\frac{\log x}{x} + c$

B. $e^x \log x + c$

C. $\frac{e^x}{x} + c$

D. $\frac{e^x}{\log x} + c$

Answer: B

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485. $\int \frac{e^x}{x}\left(x(\log x)^2 + 2\log x\right)dx =$

A. $2e^x \log x + c$

B. $-2e^x \log x + c$

C. $e^x(\log x)^2 + c$

D. $-e^x(\log)^2 x + c$

Answer: C

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486. Evaluate the following integrals:

$$\int e^x\left(\log x + \frac{1}{x^2}\right)dx$$

A. $\frac{e^x}{x}(1 + \log x) + c$

B. $\frac{e^x}{x}(1 - \log x) + c$

C. $e^x\left(\log x - \frac{1}{x}\right) + c$

D. $e^x\left(\log x + \frac{1}{x}\right) + c$

Answer: C

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487. $\int e^x\left(\frac{x - 1}{x^2}\right)dx =$

A. $\frac{e^x}{x} + c$

B. $\frac{-e^x}{x} + c$

C. $\frac{e^x}{x^2} + c$

D. $\frac{-e^x}{x^2} + c$

Answer: A

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488. $\int e^x \cdot \frac{x}{(1+x)^2} dx = ?$

A. $\frac{-e^x}{x+1} + c$

B. $\frac{-e^x}{(x+1)^2} + c$

C. $\frac{e^x}{x+1} + c$

D. $\frac{e^x}{(x+1)^2} + c$

Answer: C

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489. $\int e^x \left(\frac{x+3}{(x+4)^2} \right) dx =$

A. $\frac{1}{(x+4)^2} + c$

B. $\frac{e^x}{(x+4)^2} + c$

C. $\frac{e^x}{x+4} + c$

D. $\frac{e^x}{x+3}+c$

Answer: C

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490. $\int \frac{xe^x}{(x+2)^3}dx =$

A. $\frac{-e^x}{x+2}+c$

B. $\frac{e^x}{x+2}+c$

C. $\frac{-e^x}{(x+2)^2}+c$

D. $\frac{e^x}{(x+2)^2}+c$

Answer: D

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491. Evaluate the following integrals:

$$\int e^x \frac{(x-1)}{(x+1)^3} dx$$

A. $\frac{-e^x}{x+1} + c$

B. $\frac{e^x}{x+1} + c$

C. $\frac{-e^x}{(x+1)^2} + c$

D. $\frac{e^x}{(x+1)^2} + c$

Answer: D

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492. $\int e^x \left(\frac{x^2+1}{(x+1)^2} \right) dx =$

A. $e^x \left(\frac{x-1}{x+1} \right) + c$

B. $e^x \left(\frac{x+1}{x-1} \right) + c$

C. $e^x(x + 1)(x - 1) + c$

D. $e^x(x + 1) + c$

Answer: A

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493. $\int e^x \left(\frac{x+2}{x+4}\right)^2 dx =$

A. $e^x \left(\frac{x}{x+4}\right) + c$

B. $e^x \left(\frac{x+2}{x+4}\right) + c$

C. $e^x \left(\frac{x-2}{x+4}\right) + c$

D. $e^x \left(\frac{2x}{x+4}\right) + c$

Answer: A

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494. Evaluate: $\int e^x \frac{(1-x)^2}{\left(1+x^2\right)^2} dx$

A. $\frac{e^x}{1+x^2} + c$

B. $\frac{-e^x}{1+x^2} + c$

C. $\frac{e^x}{\left(1+x^2\right)^2} + c$

D. $\frac{-e^x}{\left(1+x^2\right)^2} + c$

Answer: A

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495. $\int e^x \left(\frac{x^2-x+1}{\left(x^2+1\right)^{\frac{3}{2}}} \right) dx =$

A. $\frac{-e^x}{x^2+1} + c$

B. $\frac{e^x}{x^2+1} + c$

C. $\frac{-e^x}{\sqrt{x^2+1}} + c$

D. $\frac{e^x}{\sqrt{x^2+1}} + c$

Answer: D

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496. Evaluate: $\int e^{2x}(-\sin x + 2\cos x)\, dx$

A. $e^{2x}\sin x + c$

B. $-e^{2x}\sin x + c$

C. $e^{2x}\cos x + c$

D. $-2e^{2x}\cos x + c$

Answer: C

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497. $\int e^{\frac{x}{2}}\left(\frac{2-\sin x}{1-\cos x}\right)dx =$

A. $2e^{\frac{x}{2}}\cot\left(\frac{x}{2}\right)+c$

B. $-2e^{\frac{x}{2}}\cot\left(\frac{x}{2}\right)+c$

C. $e^{\frac{x}{2}}\cot\left(\frac{x}{2}\right)+c$

D. $-e^{\frac{x}{2}}\cot\left(\frac{x}{2}\right)+c$

Answer: B

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498. Evaluate the following integrals:

$$\int e^{2x}\left(\frac{1+\sin 2x}{1+\cos 2x}\right)dx$$

A. $\frac{e^{2x}}{2}\cot x+c$

B. $\frac{e^{2x}}{2}\tan x+c$

C. $2e^{2x}\cot x + c$

D. $2e^{2x}\tan x + c$

Answer: B

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499. $\int e^{3x}\left(\log 2x + \frac{1}{x}\right)dx =$

A. $\frac{e^{3x}}{3}\log 2x + c$

B. $\frac{e^{3x}}{2}\log 2x + c$

C. $3e^{3x}\log 2x + c$

D. $e^{3x}\log 2x + c$

Answer: A

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500. $\int e^{\cos x}(\sin x \cos x + \sin x)dx =$

A. $e^{\cos x}\cos x + c$

B. $-e^{\cos x}\cos x + c$

C. $e^{\cos x}(1 + \cos x) + c$

D. $-e^{\cos x}(1 + \cos x) + c$

Answer: B

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501. $\int e^{\sin x}(\sin x \cos x + \cos x)dx =$

A. $e^{\sin x}\sin x + c$

B. $-e^{\sin x}\sin x + c$

C. $e^{\sin x}(1 + \sin x) + c$

D. $-e^{\sin x}(1 + \sin x) + c$

Answer: A

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502. $\int e^{\tan x}\left(\sec^2 x + \sec^3 x \sin x\right)dx$ is equal to

A. $e^{\tan x} + c$

B. $-e^{\tan x} + c$

C. $e^{\tan x}\tan x + c$

D. $-e^{\tan x}\tan x + c$

Answer: C

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503. $\int [\sin(\log x) + \cos(\log x)]dx$

A. $-x\sin(\log x) + c$

B. $x\sin(\log x) + c$

C. $-x\cos(\log x) + c$

D. $x\cos(\log x) + c$

Answer: B

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504. $\int \left[\frac{1}{\log x} - \frac{1}{(\log x)^2}\right] dx =$

A. $\frac{1}{\log x} + c$

B. $\frac{x}{\log x} + c$

C. $\frac{x}{(\log x)^2} + c$

D. $\frac{1}{x\log x} + c$

Answer: B

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505. $\int \frac{\log x}{(1+\log x)^2} dx =$ (A) $\frac{1}{1+\log x} + c$ (B) $\frac{x}{1+\log x} + c$ (C) $\log\log(1+\log x) + c$ (D) none of these

A. $\frac{x}{1+\log x} + c$

B. $\frac{-x}{1+\log x} + c$

C. $\frac{1}{1+\log x} + c$

D. $\frac{-1}{1+\log x} + c$

Answer: A

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506. If $\int \left[\frac{\log x - 1}{1+(\log x)^2}\right]^2 dx = \frac{f(x)}{1+(g(x))^2} + c$, then (A) $f(x) = x$ (B) $f(x) = x^2$ (C) $g(x) = \log x$ (D) $g(x) = (\log x)^2$

A. $\frac{xe^2}{1+x^2} + c$

B. $\frac{x}{(\log x)^2+1}+c$

C. $\frac{\log x}{(\log x)^2+1}+c$

D. $\frac{x}{x^2+1}+c$

Answer: B

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507. $\int e^{\sin^{-1}x}\left(\frac{x+\sqrt{1-x^2}}{\sqrt{1-x^2}}\right)dx =$

A. $xe^{\sin^{-1}x}+c$

B. $-xe^{\sin^{-1}x}+c$

C. $e^{\tan^{-1}x}+c$

D. $-e^{\sin^{-1}x}+c$

Answer: A

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508. $\int e^{\tan^{-1}x}\left(1+\frac{x}{1+x^2}\right)dx$

A. $e^{\tan^{-1}x}+c$

B. $-e^{\tan^{-1}x}+c$

C. $xe^{\tan^{-1}x}+c$

D. $-xe^{\tan^{-1}x}+c$

Answer: C

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509. The integral $\int\left(1+x-\frac{1}{x}\right)e^{x+\frac{1}{x}}dx$ is equal to

A. $(x-1)e^{x+\frac{1}{x}}+c$

B. $xe^{x+\frac{1}{x}}+c$

C. $(x+1)e^{x+\frac{1}{x}}+c$

D. $-xe^{x+\frac{1}{x}}+c$

Answer: B

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510. $\int 3^x(f(x)\log 3+f'(x))dx=$

A. $3^x f'(x)\log 3+c$

B. $3^x f(x)\log 3+c$

C. $3^x f'(x)+c$

D. $3^x f(x)+c$

Answer: D

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511. $\int \sqrt{(x-3)(5-x)}dx=$

A. $\frac{x-4}{2}\sqrt{(8x-x^2)-15}+\frac{1}{4}\sin^{-1}(x-4)+c$

B. $\frac{x-4}{2}\sqrt{(8x-x^2)-15}+\frac{1}{2}\sin^{-1}(x-4)+c$

C. $\frac{x-4}{4}\sqrt{(8x-x^2)-15}+\frac{1}{4}\sin^{-1}(x-4)+c$

D. $\frac{x-4}{4}\sqrt{(8x-x^2)-15}+\frac{1}{2}\sin^{-1}(x-4)+c$

Answer: B

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512. $\int\sqrt{4+3x-2x^2}dx=$

A. $\frac{4x-3}{4\sqrt{2}}\sqrt{4+3x-2x^2}+\frac{41}{16\sqrt{2}}\sin^{-1}\left(\frac{4x-3}{\sqrt{41}}\right)+c$

B. $\frac{4x-3}{4\sqrt{2}}\sqrt{4+3x-2x^2}+\frac{41}{32\sqrt{2}}\sin^{-1}\left(\frac{4x-3}{\sqrt{41}}\right)+c$

C. $\frac{4x-3}{8}\sqrt{4+3x-2x^2}+\frac{41}{16\sqrt{2}}\sin^{-1}\left(\frac{4x-3}{\sqrt{41}}\right)+c$

D. $\frac{4x-3}{8}\sqrt{4+3x-2x^2}+\frac{41}{32\sqrt{2}}\sin^{-1}\left(\frac{4x-3}{\sqrt{41}}\right)+c$

Answer: C

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513. $\int \sqrt{4 - 9x^2}dx$

A. $\frac{x}{2}\sqrt{4 - 9x^2} - \frac{2}{9}\sin^{-1}\left(\frac{3x}{2}\right) + c$

B. $\frac{x}{2}\sqrt{4 - 9x^2} + \frac{2}{9}\sin^{-1}\left(\frac{3x}{2}\right) + c$

C. $\frac{x}{2}\sqrt{4 - 9x^2} - \frac{2}{3}\sin^{-1}\left(\frac{3x}{2}\right) + c$

D. $\frac{x}{2}\sqrt{4 - 9x^2} + \frac{2}{3}\sin^{-1}\left(\frac{3x}{2}\right) + c$

Answer: D

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514. $\int \sqrt{2ax - x^2}dx$

A. $\frac{(x-a)\sqrt{2ax-x^2}}{2} - \frac{a^2}{2}\sin^{-1}\left(\frac{x-a}{a}\right) + c$

B. $\frac{(x-a)\sqrt{2ax-x^2}}{2} + \frac{a^2}{2}\sin^{-1}\left(\frac{x-a}{a}\right) + c$

C. $\frac{(x-a)\sqrt{2ax-x^2}}{2} - \frac{a}{2}\sin^{-1}\left(\frac{x-a}{a}\right) + c$

D. $\frac{(x-a)\sqrt{2ax-x^2}}{2} + \frac{a}{2}\sin^{-1}\left(\frac{x-a}{a}\right) + c$

Answer: B

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515. $\int \cos x\sqrt{36-\sin^2 x}dx =$

A. $\frac{\sin x - a}{2}\sqrt{36-\sin^2 x} + 3\sin^{-1}\left(\frac{\sin x}{6}\right) + c$

B. $\frac{\sin x - a}{2}\sqrt{36-\sin^2 x} + 6\sin^{-1}\left(\frac{\sin x}{6}\right) + c$

C. $\frac{\sin x}{2}\sqrt{36-\sin^2 x} + 18\sin^{-1}\left(\frac{\sin x}{6}\right) + c$

D. $\frac{\sin x - a}{2}\sqrt{36-\sin^2 x} + 36\sin^{-1}\left(\frac{\sin x}{6}\right) + c$

Answer: C

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516. $\int \sqrt{9x^2 - 4}dx =$

A. $\frac{x}{2}\sqrt{9x^2 - 4} + \frac{2}{3}\log\left|3x + \sqrt{9x^2 - 4}\right| + c$

B. $\frac{x}{2}\sqrt{9x^2 - 4} - \frac{2}{3}\log\left|3x + \sqrt{9x^2 - 4}\right| + c$

C. $\frac{x}{2}\sqrt{9x^2 - 4} + \frac{2}{9}\log\left|3x + \sqrt{9x^2 - 4}\right| + c$

D. $\frac{x}{2}\sqrt{9x^2 - 4} + \frac{2}{9}\log\left|3x + \sqrt{9x^2 - 4}\right| + c$

Answer: B

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517. $\int \sqrt{4x^2 + 5}dx =$

A. $\frac{x}{2}\sqrt{4x^2 + 5} - \frac{5}{4}\log\left|x + \sqrt{x^2 + \frac{5}{4}}\right| + c$

B. $\frac{x}{2}\sqrt{4x^2+5}+\frac{5}{4}\log\left|x+\sqrt{x^2+\frac{5}{4}}\right|+c$

C. $\frac{x}{2}\sqrt{4x^2+5}-\frac{5}{2}\log\left|x+\sqrt{x^2+\frac{5}{4}}\right|+c$

D. $\frac{x}{2}\sqrt{4x^2+5}+\frac{5}{2}\log\left|x+\sqrt{x^2+\frac{5}{4}}\right|+c$

Answer: B

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518. $\int\sqrt{9x^2-6x+4}dx=$

A. $\frac{3x-1}{6}\sqrt{9x^2-6x+4}+\frac{1}{2}\log\left|3x-1+\frac{\sqrt{9x^2-6x+4}}{3}\right|+c$

B. $\frac{3x-1}{6}\sqrt{9x^2-6x+4}-\frac{1}{2}\log\left|3x-1+\frac{\sqrt{9x^2-6x+4}}{3}\right|+c$

C. $\frac{3x-1}{3}\sqrt{9x^2-6x+4}+\frac{1}{2}\log\left|3x-1+\frac{\sqrt{9x^2-6x+4}}{3}\right|+c$

D. $\frac{3x-1}{3}\sqrt{9x^2-6x+4}-\frac{1}{2}\log\left|3x-1+\frac{\sqrt{9x^2-6x+4}}{3}\right|+c$

Answer: A

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519. $\int \sqrt{x^2 + 4x + 13} dx =$

A. $\frac{x+2}{2}\sqrt{x^2 + 4x + 13} + \frac{9}{2}\log\left|x + 2 + \sqrt{x^2 + 4x + 13}\right| + c$

B. $\frac{x+2}{2}\sqrt{x^2 + 4x + 13} - \frac{9}{2}\log\left|x + 2 + \sqrt{x^2 + 4x + 13}\right| + c$

C. $\frac{x+2}{2}\sqrt{x^2 + 4x + 13} + \frac{3}{2}\log\left|x + 2 + \sqrt{x^2 + 4x + 13}\right| + c$

D. $\frac{x+2}{2}\sqrt{x^2 + 4x + 13} - \frac{3}{2}\log\left|x + 2 + \sqrt{x^2 + 4x + 13}\right| + c$

Answer: A

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520. $\int \sqrt{x^2 - 4x - 5} dx =$

A. $\frac{x-2}{2}\sqrt{x^2 - 4x - 5} - \frac{9}{2}\log\left|x - 2 + \sqrt{x^2 - 4x - 5}\right| + c$

B. $\frac{x-2}{2}\sqrt{x^2-4x-5}+\frac{9}{2}\log\left|x-2+\sqrt{x^2-4x-5}\right|+c$

C. $\frac{x-2}{2}\sqrt{x^2-4x-5}-\frac{9}{4}\log\left|x-2+\sqrt{x^2-4x-5}\right|+c$

D. $\frac{x-2}{2}\sqrt{x^2-4x-5}+\frac{9}{4}\log\left|x-2+\sqrt{x^2-4x-5}\right|+c$

Answer: A

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521. $\int\sqrt{2x^2+3x+4}dx$

A. $\frac{4x+3}{8}\sqrt{2x^2+3x+4}-\frac{23}{8\sqrt{2}}\log\left|\frac{4x+3}{4}+\sqrt{x^2+\frac{3x}{2}+2}\right|+c$

B. $\frac{4x+3}{8}\sqrt{2x^2+3x+4}+\frac{23}{8\sqrt{2}}\log\left|\frac{4x+3}{4}+\sqrt{x^2+\frac{3x}{2}+2}\right|+c$

C. $\frac{4x+3}{8}\sqrt{2x^2+3x+4}-\frac{23}{16\sqrt{2}}\log\left|\frac{4x+3}{4}+\sqrt{x^2+\frac{3x}{2}+2}\right|+c$

D. $\frac{4x+3}{8}\sqrt{2x^2+3x+4}+\frac{23}{16\sqrt{2}}\log\left|\frac{4x+3}{4}+\sqrt{x^2+\frac{3x}{2}+2}\right|+c$

Answer: D

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522. $\int \sin x \sqrt{\cos^2 x - 2\cos x + 2}\, dx =$

A. $\frac{1}{2}\log\left|1 - \cos x + \sqrt{\cos^2 x - 2\cos x + 2}\right| + \frac{1 - \cos x}{2}\sqrt{\cos^2 x - 2\cos x + 2} + c$

B. $\frac{-1}{2}\log\left|1 - \cos x + \sqrt{\cos^2 x - 2\cos x + 2}\right| + \frac{1 - \cos x}{2}\sqrt{\cos^2 x - 2\cos x + 2} + c$

C. $\frac{1}{2}\log\left|\cos x - 1 + \sqrt{\cos^2 x - 2\cos x + 2}\right| + \frac{1 - \cos x}{2}\sqrt{\cos^2 x - 2\cos x + 2} + c$

D. $\frac{-1}{2}\log\left|\cos x - 1 + \sqrt{\cos^2 x - 2\cos x + 2}\right| + \frac{1 - \cos x}{2}\sqrt{\cos^2 x - 2\cos x + 2} + c$

Answer: D

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523. $\int e^x \sqrt{e^{2x} + 1}\, dx =$

A. $\frac{e^x}{4}\sqrt{e^{2x} + 1} - \frac{1}{4}\log\left|e^x + \sqrt{e^{2x} + 1}\right| + c$

B. $\frac{e^x}{4}\sqrt{e^{2x} + 1} + \frac{1}{4}\log\left|e^x + \sqrt{e^{2x} + 1}\right| + c$

C. $\frac{e^x}{2}\sqrt{e^{2x} + 1} - \frac{1}{2}\log\left|e^x + \sqrt{e^{2x} + 1}\right| + c$

D. $\frac{e^x}{2}\sqrt{e^{2x}+1}+\frac{1}{2}\log\left|e^x+\sqrt{e^{2x}+1}\right|+c$

Answer: D

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524. $\int \frac{\sqrt{1+(\log x)^2}}{x}dx =$

A. $\frac{\log x}{2}\sqrt{1+(\log x)^2}+\frac{1}{2}\log\left|\log x+\sqrt{1+(\log x)^2}\right|+c$

B. $\frac{\log x}{2}\sqrt{1+(\log x)^2}-\frac{1}{2}\log\left|\log x+\sqrt{1+(\log x)^2}\right|+c$

C. $\frac{\log x}{2}\sqrt{1+(\log x)^2}-\frac{1}{4}\log\left|\log x+\sqrt{1+(\log x)^2}\right|+c$

D. $\frac{\log x}{2}\sqrt{1+(\log x)^2}+\frac{1}{4}\log\left|\log x+\sqrt{1+(\log x)^2}\right|+c$

Answer: A

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525. $\int \frac{\sqrt{(\log x)^2 + 3(\log x) + 1}}{x} dx =$

A.

$$\frac{2\log x + 3}{4}\sqrt{(\log x)^2 + 3(\log x) + 1} - \frac{5}{4}\log\left|\log x + \frac{3}{2} + \sqrt{(\log x)^2 + 3(\log x) + 1}\right.$$

B.

$$\frac{2\log x + 3}{4}\sqrt{(\log x)^2 + 3(\log x) + 1} - \frac{5}{8}\log\left|\log x + \frac{3}{2} + \sqrt{(\log x)^2 + 3(\log x) + 1}\right.$$

C.

$$\frac{2\log x + 3}{4}\sqrt{(\log x)^2 + 3(\log x) + 1} + \frac{5}{4}\log\left|\log x + \frac{3}{2} + \sqrt{(\log x)^2 + 3(\log x) + 1}\right.$$

D.

$$\frac{2\log x + 3}{4}\sqrt{(\log x)^2 + 3(\log x) + 1} + \frac{5}{8}\log\left|\log x + \frac{3}{2} + \sqrt{(\log x)^2 + 3(\log x) + 1}\right.$$

Answer: B

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526. $\int (x - 5)\sqrt{x^2 - 1} dx =$

A. $\frac{1}{3}\sqrt{\left(x^2-1\right)^3}-\frac{5x}{2}\sqrt{x^2-1}+\frac{5}{2}\log\left|x+\sqrt{x^2-1}\right|+c$

B. $\frac{1}{3}\sqrt{\left(x^2-1\right)^3}+\frac{5x}{2}\sqrt{x^2-1}-\frac{5}{2}\log\left|x+\sqrt{x^2-1}\right|+c$

C. $\frac{1}{3}\sqrt{\left(x^2-1\right)^3}-\frac{5x}{2}\sqrt{x^2-1}-\frac{5}{2}\log\left|x+\sqrt{x^2-1}\right|+c$

D. $\frac{1}{3}\sqrt{\left(x^2-1\right)^3}+\frac{5x}{2}\sqrt{x^2-1}+\frac{5}{2}\log\left|x+\sqrt{x^2-1}\right|+c$

Answer: A

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527. $\int x\sqrt{1+x-x^2}dx$

A. $\frac{1}{3}\sqrt{\left(1+x-x^2\right)^3}+\frac{1}{16}\left((2x-1)\sqrt{1+x-x^2}+\frac{5}{2}\sin^{-1}\left(\frac{2x-1}{\sqrt{5}}\right)\right)+c$

B. $\frac{1}{3}\sqrt{\left(1+x-x^2\right)^3}-\frac{1}{16}\left((2x-1)\sqrt{1+x-x^2}+\frac{5}{2}\sin^{-1}\left(\frac{2x-1}{\sqrt{5}}\right)\right)+c$

C. $\frac{-1}{3}\sqrt{\left(1+x-x^2\right)^3}-\frac{1}{8}\left((2x-1)\sqrt{1+x-x^2}+\frac{5}{2}\sin^{-1}\left(\frac{2x-1}{\sqrt{5}}\right)\right)+c$

D. $\frac{-1}{3}\sqrt{\left(1+x-x^2\right)^3}+\frac{1}{8}\left((2x-1)\sqrt{1+x-x^2}+\frac{5}{2}\sin^{-1}\left(\frac{2x-1}{\sqrt{5}}\right)\right)+c$

Answer: D

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528. Evaluate: $\int (x+1)\sqrt{x^2 - x + 1}\,dx$

A.

$$\frac{1}{3}\sqrt{\left(x^2+x+1\right)^3} - \frac{1}{8}(2x+1)\sqrt{x^2+x+1} + \frac{3}{16}\log\left|\frac{2x+1}{2} + \sqrt{x^2+x+1}\right| c$$

B.

$$\frac{1}{3}\sqrt{\left(x^2+x+1\right)^3} + \frac{1}{8}(2x+1)\sqrt{x^2+x+1} - \frac{3}{16}\log\left|\frac{2x+1}{2} + \sqrt{x^2+x+1}\right| c$$

C.

$$\frac{1}{3}\sqrt{\left(x^2+x+1\right)^3} - \frac{1}{8}(2x+1)\sqrt{x^2+x+1} - \frac{3}{16}\log\left|\frac{2x+1}{2} + \sqrt{x^2+x+1}\right| c$$

D.

$$\frac{1}{3}\sqrt{\left(x^2+x+1\right)^3} + \frac{1}{8}(2x+1)\sqrt{x^2+x+1} + \frac{3}{16}\log\left|\frac{2x+1}{2} + \sqrt{x^2+x+1}\right| c$$

Answer: D

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529. Evaluate: $\int (x - 5)\sqrt{x^2 + x}\,dx$

A. $\frac{1}{3}\sqrt{\left(x^2 + x\right)^3} + \frac{11}{8}(2x + 1)\sqrt{x^2 + x} + \frac{11}{16}\log\left|\frac{2x + 1}{2} + \sqrt{x^2 + x}\right|c$

B. $\frac{1}{3}\sqrt{\left(x^2 + x\right)^3} - \frac{11}{8}(2x + 1)\sqrt{x^2 + x} + \frac{11}{16}\log\left|\frac{2x + 1}{2} + \sqrt{x^2 + x}\right|c$

C. $\frac{1}{3}\sqrt{\left(x^2 + x\right)^3} + \frac{11}{8}(2x + 1)\sqrt{x^2 + x} - \frac{11}{16}\log\left|\frac{2x + 1}{2} + \sqrt{x^2 + x}\right|c$

D. $\frac{1}{3}\sqrt{\left(x^2 + x\right)^3} - \frac{11}{8}(2x + 1)\sqrt{x^2 + x} - \frac{11}{16}\log\left|\frac{2x + 1}{2} + \sqrt{x^2 + x}\right|c$

Answer: B

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530. Evaluate: $\int (3x - 2)\sqrt{x^2 + x + 1}\,dx$

A.

$$\sqrt{\left(x^2 + x + 1\right)^3} - \frac{7}{8}(2x + 1)\sqrt{x^2 + x + 1} + \frac{21}{16}\log\left|x + \frac{1}{2} + \sqrt{x^2 + x + 1}\right|c$$

B. $\sqrt{\left(x^2+x+1\right)^3}-\frac{7}{8}(2x+1)\sqrt{x^2+x+1}-\frac{21}{16}\log\left|x+\frac{1}{2}+\sqrt{x^2+x+1}\right|c$

C.

$\sqrt{\left(x^2+x+1\right)^3}-\frac{7}{8}(2x+1)\sqrt{x^2+x+1}+\frac{21}{8}\log\left|x+\frac{1}{2}+\sqrt{x^2+x+1}\right|c$

D. $\sqrt{\left(x^2+x+1\right)^3}-\frac{7}{8}(2x+1)\sqrt{x^2+x+1}-\frac{21}{8}\log\left|x+\frac{1}{2}+\sqrt{x^2+x+1}\right|c$

Answer: B

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531. $\int\frac{dx}{x(x+1)}=$

A. $\log\left|\frac{x+1}{x}\right|+c$

B. $\log\left|\frac{x}{x+1}\right|+c$

C. $\log\left|\frac{x-1}{x}\right|+c$

D. $\log\left|\frac{x-1}{x+1}\right|+c$

Answer: B

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532. $\int \frac{dx}{x - x^3} =$

A. $\frac{1}{2}\log\left|\frac{1 - x^2}{x^2}\right| + c$

B. $\log\left|\frac{1 - x}{x(1 + x)}\right| + c$

C. $\log\left|x - x^3\right| + c$

D. $\frac{1}{2}\log\left|\frac{x^2}{1 - x^2}\right| + c$

Answer: D

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533. $\int \frac{dx}{x(x - 2)(x - 4)}$

A. $\frac{1}{8}\log|x| - \frac{1}{4}\log|x-2| - \frac{1}{8}\log|x-4| + c$

B. $\frac{1}{8}\log|x| - \frac{1}{4}\log|x-2| + \frac{1}{8}\log|x-4| + c$

C. $\frac{1}{8}\log|x| + \frac{1}{4}\log|x-2| - \frac{1}{8}\log|x-4| + c$

D. $\frac{1}{8}\log|x| + \frac{1}{4}\log|x-2| + \frac{1}{8}\log|x-4| + c$

Answer: B

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534. $\int \frac{x+1}{x^2+5x+6}dx =$

A. $\log\left|\frac{(x+3)^2}{x+2}\right| + c$

B. $\log\left|\frac{x+2}{(x+3)^2}\right| + c$

C. $2\log\left|\frac{x+3}{x+2}\right| + c$

D. $2\log\left|\frac{x+2}{x+3}\right| + c$

Answer: A

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535. $\int \frac{2x}{4 - 3x - x^2} dx =$

A. $\frac{-8}{5}\log|4 + x| + \frac{2}{5}\log|1 - x| + c$

B. $\frac{-8}{5}\log|4 + x| - \frac{2}{5}\log|1 - x| + c$

C. $\frac{-4}{5}\log|4 + x| + \frac{2}{5}\log|1 - x| + c$

D. $\frac{-4}{5}\log|4 + x| - \frac{2}{5}\log|1 - x| + c$

Answer: B

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536. $\int \frac{4x}{2x^2 + x - 1} dx =$

A. $\frac{2}{3}\log|2x - 1| + \frac{2}{3}\log|x + 1| + c$

B. $\frac{2}{3}\log|2x - 1| - \frac{2}{3}\log|x + 1| + c$

C. $\frac{2}{3}\log|2x - 1| + \frac{4}{3}\log|x + 1| + c$

D. $\frac{2}{3}\log|2x - 1| - \frac{4}{3}\log|x + 1| + c$

Answer: C

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537. $\int \frac{12x + 3}{6x^2 + 13x - 63} dx =$

A. $\frac{31}{41}\log|2x + 9| + \frac{51}{41}\log|3x - 7| + c$

B. $\frac{31}{21}\log|2x + 9| + \frac{51}{21}\log|3x - 7| + c$

C. $\frac{51}{41}\log|2x + 9| + \frac{31}{41}\log|3x - 7| + c$

D. $\frac{51}{21}\log|2x + 9| + \frac{31}{41}\log|3x - 7| + c$

Answer: D

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538. $\int \frac{x^2 + 2}{(x - 1)(x + 2)(x + 3)} dx =$

A. $\frac{1}{4}\log|x - 1| + 2\log|x + 2| + \frac{11}{4}\log|x + 3| + c$

B. $\frac{1}{4}\log|x - 1| + 2\log|x + 2| - \frac{11}{4}\log|x + 3| + c$

C. $\frac{1}{4}\log|x - 1| - 2\log|x + 2| + \frac{11}{4}\log|x + 3| + c$

D. $\frac{1}{4}\log|x - 1| - 2\log|x + 2| - \frac{11}{4}\log|x + 3| + c$

Answer: C

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539. $\int \frac{x^2}{(x - 1)(3x - 1)(3x - 2)} dx =$

A. $\frac{1}{2}\log|x - 1| + \frac{1}{18}\log|3x - 1| + \frac{4}{9}\log|3x - 2| + c$

B. $\frac{1}{2}\log|x - 1| - \frac{1}{18}\log|3x - 1| + \frac{4}{9}\log|3x - 2| + c$

C. $\frac{1}{2}\log|x - 1| + \frac{1}{18}\log|3x - 1| - \frac{4}{9}\log|3x - 2| + c$

D. $\frac{1}{2}\log|x - 1| - \frac{1}{18}\log|3x - 1| - \frac{4}{9}\log|3x - 2| + c$

Answer: C

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540. $\int \frac{x^2 + x - 1}{x^2 + x - 6} dx$

A. $x + \log|x + 3| + \log|x + 2| + c$

B. $x - \log|x + 3| - \log|x + 2| + c$

C. $x - \log|x + 3| + \log|x + 2| + c$

D. $x + \log|x + 3| - \log|x + 2| + c$

Answer: C

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541. Evaluate : $\int \frac{1 - x^2}{x(1 - 2x)} dx$.

A. $\frac{x}{2} + \log|x| + \frac{3}{2}\log|1 - 2x| + c$

B. $\frac{x}{2} + \log|x| - \frac{3}{2}\log|1 - 2x| + c$

C. $\frac{x}{2} + \log|x| + \frac{3}{4}\log|1 - 2x| + c$

D. $\frac{x}{2} + \log|x| - \frac{3}{4}\log|1 - 2x| + c$

Answer: D

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542. $\frac{x^3 - 4x^2 + 3x + 11}{x^2 - 5x + 6}$

A. $\frac{x^2}{2} + x + 9\log|x - 2| + 11\log|x - 3| + c$

B. $\frac{x^2}{2} - x + 9\log|x - 2| + 11\log|x - 3| + c$

C. $\frac{x^2}{2} + x + 9\log|x - 2| - 11\log|x - 3| + c$

D. $\frac{x^2}{2} + x - 9\log|x - 2| + 11\log|x - 3| + c$

Answer: D

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543. $\int \frac{2x^3 + 3x^2 - 3}{2x^2 - x - 1} dx =$

A. $\frac{x^2}{2} + 2x + \frac{5}{6}\log|2x + 1| + \frac{1}{3}\log|x - 1| + c$

B. $\frac{x^2}{2} + 2x + \frac{5}{6}\log|2x + 1| + \frac{2}{3}\log|x - 1| + c$

C. $\frac{x^2}{2} + 2x + \frac{1}{6}\log|2x + 1| + \frac{2}{3}\log|x - 1| + c$

D. $\frac{x^2}{2} + 2x + \frac{1}{6}\log|2x + 1| + \frac{1}{3}\log|x - 1| + c$

Answer: B

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544. Evaluate: $\int \frac{x^2 + 1}{x^2 - 5x + 6} dx$

A. $x + 5\log\left|\frac{(x - 3)^2}{x - 2}\right| + c$

B. $x - 5\log\left|\frac{(x - 3)^2}{x - 2}\right| + c$

C. $x + \log\left|\frac{(x - 3)^2}{x - 2}\right| + c$

D. $x - \log\left|\frac{(x-3)^2}{x-2}\right| + c$

Answer: A

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545. $\int \frac{3}{(x^2+1)(x^2+4)} dx =$

A. $\tan^{-1}x + \frac{1}{2}\tan^{-1}\left(\frac{x}{2}\right) + c$

B. $\tan^{-1}x - \frac{1}{2}\tan^{-1}\left(\frac{x}{2}\right) + c$

C. $\tan^{-1}x + 2\tan^{-1}\left(\frac{x}{2}\right) + c$

D. $\tan^{-1}x - 2\tan^{-1}\left(\frac{x}{2}\right) + c$

Answer: B

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546. $\int \frac{x^2}{\left(x^2+2\right)\left(2x^2+1\right)}dx =$

A. $\frac{\sqrt{2}}{3}\tan^{-1}\left(\frac{x}{\sqrt{2}}\right)+\frac{1}{3\sqrt{2}}\tan^{-1}\left(\sqrt{2x}\right)+c$

B. $\frac{\sqrt{2}}{3}\tan^{-1}\left(\frac{x}{\sqrt{2}}\right)-\frac{1}{3\sqrt{2}}\tan^{-1}\left(\sqrt{2x}\right)+c$

C. $\frac{2}{3}\tan^{-1}\left(\frac{x}{\sqrt{2}}\right)+\frac{1}{3\sqrt{2}}\tan^{-1}\left(\sqrt{2x}\right)+c$

D. $\frac{2}{3}\tan^{-1}\left(\frac{x}{\sqrt{2}}\right)-\frac{1}{3\sqrt{2}}\tan^{-1}\left(\sqrt{2x}\right)+c$

Answer: B

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547. $\int \frac{x^2}{x^4+5x^2+6}dx =$

A. $\sqrt{3}\tan^{-1}\left(\frac{x}{\sqrt{3}}\right)-\sqrt{2}\tan^{-1}\left(\frac{x}{\sqrt{2}}\right)+c$

B. $\sqrt{3}\tan^{-1}\left(\frac{x}{\sqrt{3}}\right)+\sqrt{2}\tan^{-1}\left(\frac{x}{\sqrt{2}}\right)+c$

C. $\frac{1}{\sqrt{3}}\tan^{-1}\left(\frac{x}{\sqrt{3}}\right) - \frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{x}{\sqrt{2}}\right) + c$

D. $\frac{1}{\sqrt{3}}\tan^{-1}\left(\frac{x}{\sqrt{3}}\right) + \frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{x}{\sqrt{2}}\right) + c$

Answer: A

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548. $\int \frac{2x^2 - 1}{\left(x^2 + 4\right)\left(x^2 + 5\right)} dx =$

A. $\frac{11}{2\sqrt{5}}\tan^{-1}\left(\frac{x}{\sqrt{5}}\right) + \frac{9}{2}\tan^{-1}\left(\frac{x}{2}\right) + c$

B. $\frac{11}{2\sqrt{5}}\tan^{-1}\left(\frac{x}{\sqrt{5}}\right) - \frac{9}{2}\tan^{-1}\left(\frac{x}{2}\right) + c$

C. $\frac{11}{\sqrt{5}}\tan^{-1}\left(\frac{x}{\sqrt{5}}\right) + \frac{9}{2}\tan^{-1}\left(\frac{x}{2}\right) + c$

D. $\frac{11}{\sqrt{5}}\tan^{-1}\left(\frac{x}{\sqrt{5}}\right) - \frac{9}{2}\tan^{-1}\left(\frac{x}{2}\right) + c$

Answer: D

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549. $\int \frac{2x^2 - 1}{\left(x^2 + 4\right)\left(x^2 - 5\right)} dx =$

A. $\frac{1}{5}\tan^{-1}\left(\frac{x}{2}\right) + \frac{1}{2\sqrt{5}}\log\left|\frac{x + \sqrt{5}}{x - \sqrt{5}}\right| + c$

B. $\frac{1}{5}\tan^{-1}\left(\frac{x}{2}\right) + \frac{1}{2\sqrt{5}}\log\left|\frac{x - \sqrt{5}}{x + \sqrt{5}}\right| + c$

C. $\frac{1}{5}\tan^{-1}\left(\frac{x}{2}\right) + \frac{1}{\sqrt{5}}\log\left|\frac{x + \sqrt{5}}{x - \sqrt{5}}\right| + c$

D. $\frac{1}{5}\tan^{-1}\left(\frac{x}{2}\right) + \frac{1}{\sqrt{5}}\log\left|\frac{x - \sqrt{5}}{x + \sqrt{5}}\right| + c$

Answer: B

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550. If : $\int \frac{2x^2 + 3}{\left(x^2 - 1\right)\left(x^2 - 4\right)} dx = \log\left[\left(\frac{x - 2}{x +}\right)^a \cdot \left(\frac{x + 1}{x - 1}\right)^b\right] + c$ then : $(a, b) \equiv$

A. $a = \frac{11}{12}, b = \frac{5}{6}$

B. $a = \frac{11}{12}, b = \frac{-5}{6}$

C. $a = \frac{-11}{12}, b = \frac{5}{6}$

D. $a = \frac{-11}{12}, b = \frac{-5}{6}$

Answer: A

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551. $\int \frac{x^2}{(x^2+1)(x^2-2)(x^2+3)} dx =$

A. $\frac{1}{6}\tan^{-1}x + \frac{\sqrt{3}}{10}\tan^{-1}\left(\frac{x}{\sqrt{3}}\right) - \frac{1}{15\sqrt{2}}\log\left|\frac{x-\sqrt{2}}{x+\sqrt{2}}\right| + c$

B. $\frac{1}{6}\tan^{-1}x - \frac{\sqrt{3}}{10}\tan^{-1}\left(\frac{x}{\sqrt{3}}\right) - \frac{1}{15\sqrt{2}}\log\left|\frac{x-\sqrt{2}}{x+\sqrt{2}}\right| + c$

C. $\frac{1}{6}\tan^{-1}x + \frac{\sqrt{3}}{10}\tan^{-1}\left(\frac{x}{\sqrt{3}}\right) + \frac{1}{15\sqrt{2}}\log\left|\frac{x-\sqrt{2}}{x+\sqrt{2}}\right| + c$

D. $\frac{1}{6}\tan^{-1}x - \frac{\sqrt{3}}{10}\tan^{-1}\left(\frac{x}{\sqrt{3}}\right) + \frac{1}{15\sqrt{2}}\log\left|\frac{x-\sqrt{2}}{x+\sqrt{2}}\right| + c$

Answer: D

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552. $\int \frac{dx}{x\left(x^5+1\right)}$

A. $\frac{1}{5}\log\left|\frac{x^5+1}{x^5}\right|+c$

B. $\frac{1}{5}\log\left|\frac{x^5}{x^5+1}\right|+c$

C. $\frac{1}{10}\log\left|\frac{x^5+1}{x^5}\right|+c$

D. $\frac{1}{10}\log\left|\frac{x^5}{x^5+1}\right|+c$

Answer: B

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553. $\int \frac{dx}{x\left(x^6+1\right)}$

A. $\frac{1}{6}\log\left|\frac{x^6}{x^6+1}\right|+c$

B. $\frac{1}{6}\log\left|\frac{x^6+1}{x^6}\right|+c$

C. $6\log\left|\frac{x^6}{x^6+1}\right|+c$

D. $6\log\left|\frac{x^6+1}{x^6}\right|+c$

Answer: A

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554. $\int\frac{2x}{\left(x^2+2\right)\left(x^2+3\right)}dx=$

A. $2\log\left|\frac{x^2+2}{x^2+3}\right|+c$

B. $2\log\left|\frac{x^2+3}{x^2+2}\right|+c$

C. $\log\left|\frac{x^2+2}{x^2+3}\right|+c$

D. $2\log\left|\frac{x^2+3}{x^2+2}\right|+c$

Answer: C

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555. $\int \frac{x}{\left(x^2-a^2\right)\left(x^2-b^2\right)}dx$ is equal to

A. $\frac{1}{2\left(a^2-b^2\right)}\log\left|\frac{x^2-a^2}{x^2-b^2}\right|+c$

B. $\frac{1}{2\left(a^2-b^2\right)}\log\left|\frac{x^2-b^2}{x^2-a^2}\right|+c$

C. $\frac{1}{a^2-b^2}\log\left|\frac{x^2-a^2}{x^2-b^2}\right|+c$

D. $\frac{1}{a^2-b^2}\log\left|\frac{x^2-b^2}{x^2-a^2}\right|+c$

Answer: A

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556. $\int \frac{x^2}{\left(1+x^3\right)\left(2+x^3\right)} dx$

A. $\frac{1}{6}\log\left|\frac{x^3+2}{x^3+1}\right| + c$

B. $\frac{1}{6}\log\left|\frac{x^3+1}{x^3+2}\right| + c$

C. $\frac{1}{3}\log\left|\frac{x^3+2}{x^3+1}\right| + c$

D. $\frac{1}{3}\log\left|\frac{x^3+1}{x^3+2}\right| + c$

Answer: D

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557. $\int \frac{\sin 2x}{(1-\cos 2x)(2-\cos 2x)} dx =$

A. $\frac{1}{2}\log\left|\frac{1-\cos 2x}{2-\cos 2x}\right| + c$

B. $\frac{1}{2}\log\left|\frac{2 - \cos 2x}{1 - \cos 2x}\right| + c$

C. $\log\left|\frac{1 - \cos 2x}{2 - \cos 2x}\right| + c$

D. $\log\left|\frac{2 - \cos 2x}{1 - \cos 2x}\right| + c$

Answer: A

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558. $\int \frac{dx}{\sin x(3 + 2\cos x)}$

A. $\frac{1}{10}\log|1 - \cos x| - \frac{1}{2}\log|1 + \cos x| + \frac{2}{5}\log|3 + 2\cos x| + c$

B. $\frac{1}{10}\log|1 - \cos x| + \frac{1}{2}\log|1 + \cos x| - \frac{2}{5}\log|3 + 2\cos x| + c$

C. $\frac{1}{10}\log|1 - \cos x| - \frac{1}{2}\log|1 + \cos x| - \frac{2}{5}\log|3 + 2\cos x| + c$

D. $\frac{1}{10}\log|1 - \cos x| + \frac{1}{2}\log|1 + \cos x| + \frac{2}{5}\log|3 + 2\cos x| + c$

Answer: A

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559. $\int \frac{dx}{\sin x + \sin 2x}$

A. $\frac{1}{6}\log|1 - \cos x| + \frac{1}{2}\log|1 + \cos x| + \frac{2}{3}\log|1 + 2\cos x| + c$

B. $\frac{1}{6}\log|1 - \cos x| - \frac{1}{2}\log|1 + \cos x| + \frac{2}{3}\log|1 + 2\cos x| + c$

C. $\frac{1}{6}\log|1 - \cos x| + \frac{1}{2}\log|1 + \cos x| - \frac{2}{3}\log|1 + 2\cos x| + c$

D. $\frac{1}{6}\log|1 - \cos x| - \frac{1}{2}\log|1 + \cos x| - \frac{2}{3}\log|1 + 2\cos x| + c$

Answer: C

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560. $\int \frac{dy}{\cos y + \sin 2y} =$

A. $\frac{2}{3}\log|1 + 2\sin y| + \frac{1}{2}\log|1 + \sin y| + \frac{1}{6}\log|1 - \sin y| + c$

B. $\frac{2}{3}\log|1 + 2\sin y| - \frac{1}{2}\log|1 + \sin y| - \frac{1}{6}\log|1 - \sin y| + c$

C. $\frac{2}{3}\log|1 + 2\sin y| - \frac{1}{2}\log|1 + \sin y| + \frac{1}{6}\log|1 - \sin y| + c$

D. $\frac{2}{3}\log|1 + 2\sin y| + \frac{1}{2}\log|1 + \sin y| - \frac{1}{6}\log|1 - \sin y| + c$

Answer: B

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561. $\int \frac{e^x}{\left(1+e^x\right)\left(2+e^x\right)} dx$

A. $\log\left|\frac{1+e^x}{2+e^x}\right| + c$

B. $\log\left|\frac{2+e^x}{1+e^x}\right| + c$

C. $\frac{1}{2}\log\left|\frac{1+e^x}{2+e^x}\right| + c$

D. $\frac{1}{2}\log\left|\frac{2+e^x}{1+e^x}\right| + c$

Answer: A

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562. $\int \frac{1}{x\log x(2+\log x)}dx =$

A. $\frac{1}{2}\log\left|\frac{2+\log x}{\log x}\right| + c$

B. $\frac{1}{2}\log\left|\frac{\log x}{2+\log x}\right| + c$

C. $\frac{1}{4}\log\left|\frac{2+\log x}{\log x}\right| + c$

D. $\frac{1}{4}\log\left|\frac{\log x}{2+\log x}\right| + c$

Answer: B

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563. $\int \frac{\log x}{x(1+\log x)(2+\log x)}dx =$

A. $\log\left|\frac{(2+\log x)^2}{1+\log x}\right| + c$

B. $\log\left|\frac{1+\log x}{(2+\log x)^2}\right| + c$

C. $\log\left|\frac{2+\log x}{1+\log x}\right|+c$

D. $\log\left|\frac{1+\log x}{2+\log x}\right|+c$

Answer: A

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564. $\int \frac{1+\log x}{x(2x+\log x)(3+\log x)}dx$ (March '16)

A. $2\log|3+\log x|+\log|2+\log x|+c$

B. $2\log|3+\log x|-\log|2+\log x|+c$

C. $\log|3+\log x|+2\log|2+\log x|+c$

D. $\log|3+\log x|-2\log|2+\log x|+c$

Answer: B

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565. Evaluate: $\int \frac{5x^2 + 20x + 6}{x^3 + 2x^2 + x} dx$

A. $6\log|x| + \log|x + 1| + \frac{9}{x + 1} + c$

B. $6\log|x| - \log|x + 1| + \frac{9}{x + 1} + c$

C. $6\log|x| + \log|x + 1| - \frac{9}{x + 1} + c$

D. $6\log|x| - \log|x + 1| - \frac{9}{x + 1} + c$

Answer: D

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566. The value of $\int \frac{3x + 2}{(x - 2)^2(x - 3)} dx$ is equal to

A. $11\log\left|\frac{x - 3}{x - 2}\right| - \frac{8}{x - 2} + c$

B. $11\log\left|\frac{x - 3}{x - 2}\right| - \frac{4}{x - 2} + c$

C. $11\log\left|\frac{x - 3}{x - 2}\right| + \frac{8}{x - 2} + c$

D. $11\log\left|\frac{x-3}{x-2}\right| + \frac{4}{x-2} + c$

Answer: C

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567. $\int \frac{3x+1}{(x+2)(x-2)^2} dx$

A. $\frac{5}{16}\log|x-2| + \frac{7}{4(x-2)} + \frac{5}{16}\log|x+2| + c$

B. $\frac{5}{16}\log|x-2| - \frac{7}{4(x-2)} - \frac{5}{16}\log|x+2| + c$

C. $\frac{5}{16}\log|x-2| - \frac{7}{4(x-2)} + \frac{5}{16}\log|x+2| + c$

D. $\frac{5}{16}\log|x-2| + \frac{7}{4(x-2)} - \frac{5}{16}\log|x+2| + c$

Answer: B

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568. $\int \frac{3x-2}{(x+1)^2(x+3)} dx$

A. $\frac{11}{4}\log|x+1| + \frac{5}{2(x+1)} + \frac{11}{4}\log|x+3| + c$

B. $\frac{11}{4}\log|x+1| - \frac{5}{2(x+1)} - \frac{11}{4}\log|x+3| + c$

C. $\frac{11}{4}\log|x+1| - \frac{5}{2(x+1)} + \frac{11}{4}\log|x+3| + c$

D. $\frac{11}{4}\log|x+1| + \frac{5}{2(x+1)} - \frac{11}{4}\log|x+3| + c$

Answer: D

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569. Evaluate : $\int \frac{x^2+1}{(x-1)^2}\backslash\, dx$

A. $x + 2\log|x+1| + \frac{2}{x+1} + c$

B. $x + 2\log|x+1| - \frac{2}{x+1} + c$

C. $x - 2\log|x+1| + \frac{2}{x+1} + c$

D. $x - 2\log|x+1| - \frac{2}{x+1} + c$

Answer: D

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570. $\int \frac{3x - 1}{(x - 2)^2} dx$

A. $3\log|x - 2| + \frac{1}{x - 2} + c$

B. $3\log|x - 2| - \frac{1}{x - 2} + c$

C. $3\log|x - 2| + \frac{5}{x - 2} + c$

D. $3\log|x - 2| - \frac{5}{x - 2} + c$

Answer: D

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571. $\int \frac{2x + 7}{(x - 4)^2} dx =$

A. $4\log|x - 4| - \frac{15}{x - 4} + c$

B. $4\log|x - 4| + \frac{15}{x - 4} + c$

C. $2\log|x - 4| - \frac{15}{x - 4} + c$

D. $2\log|x-4| + \frac{15}{x-4} + c$

Answer: C

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572. Evaluate: $\int \frac{x^2+x+1}{(x-1)^3} dx$

A. $\log|x-1| - \frac{3}{x-1} - \frac{3}{2(x-1)} + c$

B. $\log|x-1| - \frac{3}{x-1} + \frac{3}{2(x-1)} + c$

C. $\log|x-1| + \frac{3}{x-1} - \frac{3}{2(x-1)} + c$

D. $\log|x-1| + \frac{3}{x-1} + \frac{3}{2(x-1)} + c$

Answer: A

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573. Evaluate: $\int \frac{(3\sin x - 2)\cos x}{5 - \cos^2 x - 4\sin x} dx$

A. $3\log|\sin x - 2| + \frac{4}{\sin x - 2} + c$

B. $3\log|\sin x - 2| - \frac{4}{\sin x - 2} + c$

C. $3\log|\sin x - 2| + \frac{2}{\sin x - 2} + c$

D. $3\log|\sin x - 2| - \frac{2}{\sin x - 2} + c$

Answer: B

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574. $\int \frac{\tan x}{(1 - \tan x)} dx$

A. $\frac{1}{4}\log\left|\frac{1 + \sin x}{1 - \sin x}\right| + \frac{1}{2(1 - \sin x)} + c$

B. $\frac{1}{4}\log\left|\frac{1 + \sin x}{1 - \sin x}\right| - \frac{1}{2(1 - \sin x)} + c$

C. $\frac{1}{4}\log\left|\frac{1 - \sin x}{1 + \sin x}\right| + \frac{1}{2(1 - \sin x)} + c$

D. $\frac{1}{4}\log\left|\frac{1 - \sin x}{1 + \sin x}\right| - \frac{1}{2(1 - \sin x)} + c$

Answer: C

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575. $\int \frac{\sin 2x}{(3+2\sin x)^2} dx =$

A. $\frac{1}{2}\log|3+2\sin x| + \frac{3}{2(3+2\sin x)} + c$

B. $\frac{1}{2}\log|3+2\sin x| - \frac{3}{2(3+2\sin x)} + c$

C. $\frac{1}{2}\log|3+2\sin x| + \frac{2}{3(3+2\sin x)} + c$

D. $\frac{1}{2}\log|3+2\sin x| - \frac{2}{3(3+2\sin x)} + c$

Answer: A

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576. $\int \frac{8}{(x+2)\left(x^2+4\right)} dx$

A. $\log|x+2| + \frac{1}{2}\log\left|x^2+4\right| - \tan^{-1}\left(\frac{x}{2}\right) + c$

B. $\log|x+2| - \frac{1}{2}\log\left|x^2+4\right| + \tan^{-1}\left(\frac{x}{2}\right) + c$

C. $\log|x+2| - \frac{1}{2}\log\left|x^2+4\right| - \tan^{-1}\left(\frac{x}{2}\right) + c$

D. $\log|x+2| + \frac{1}{2}\log\left|x^2+4\right| + \tan^{-1}\left(\frac{x}{2}\right) + c$

Answer: B

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577. $\int \frac{5x^2}{(x+1)\left(x^2+4\right)} dx =$

A. $\log|x+1| + 2\log\left|x^2+4\right| - 2\tan^{-1}\left(\frac{x}{2}\right) + c$

B. $\log|x+1| - 2\log\left|x^2+4\right| + 2\tan^{-1}\left(\frac{x}{2}\right) + c$

C. $\log|x+1| - 2\log\left|x^2+4\right| - 2\tan^{-1}\left(\frac{x}{2}\right) + c$

D. $\log|x+1| + 2\log\left|x^2+4\right| + 2\tan^{-1}\left(\frac{x}{2}\right) + c$

Answer: A

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578. Evaluate: $\int \frac{x}{(x+1)\left(x^2+1\right)} dx$

A. $\frac{1}{2}\log|x-1| + \frac{1}{4}\log\left|x^2+1\right| + \frac{1}{2}\tan^{-1}x + c$

B. $\frac{1}{2}\log|x-1| - \frac{1}{4}\log\left|x^2+1\right| - \frac{1}{2}\tan^{-1}x + c$

C. $\frac{1}{2}\log|x-1| - \frac{1}{4}\log\left|x^2+1\right| + \frac{1}{2}\tan^{-1}x + c$

D. $\frac{1}{2}\log|x-1| + \frac{1}{4}\log\left|x^2+1\right| - \frac{1}{2}\tan^{-1}x + c$

Answer: C

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579. $\int \frac{dx}{1+x+x^2+x^3} dx =$

A. $\frac{1}{2}\log|1+x| + \frac{1}{4}\log\left|1+x^2\right| + \frac{1}{2}\tan^{-1}x + c$

B. $\frac{1}{2}\log|1+x| - \frac{1}{4}\log\left|1+x^2\right| - \frac{1}{2}\tan^{-1}x + c$

C. $\frac{1}{2}\log|1+x| + \frac{1}{4}\log\left|1+x^2\right| - \frac{1}{2}\tan^{-1}x + c$

D. $\frac{1}{2}\log|1+x| - \frac{1}{4}\log\left|1+x^2\right| + \frac{1}{2}\tan^{-1}x + c$

Answer: D

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580. $\int \frac{1}{(x+1)^2\left(x^2+1\right)} dx =$

A. $\frac{1}{2}\log|x+1| + \frac{1}{2(x+1)} - \frac{1}{4}\log\left|x^2+1\right| + c$

B. $\frac{1}{2}\log|x+1| - \frac{1}{2(x+1)} + \frac{1}{4}\log\left|x^2+1\right| + c$

C. $\frac{1}{2}\log|x+1| - \frac{1}{2(x+1)} - \frac{1}{4}\log\left|x^2+1\right| + c$

D. $\frac{1}{2}\log|x+1| + \frac{1}{2(x+1)} + \frac{1}{4}\log\left|x^2+1\right| + c$

Answer: C

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581. Let $I_n = \int \tan^n x dx, (n > 1) \cdot I_4 + I_6 = a\tan^5 x + bx^5 + c,$ where c is constant of integration, then the ordered pair (a,b) is equal to

A. $\left(\frac{-1}{5}, 0\right)$

B. $\left(\frac{-1}{5}, 1\right)$

C. $\left(\frac{1}{5}, 0\right)$

D. $\left(\frac{1}{5}, -1\right)$

Answer: C

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582. If $\int \frac{dx}{\left(x^2+4\right)\left(x^2+9\right)} = A\tan^{-1}\left(\frac{x}{2}\right) + B\tan^{-1}\left(\frac{x}{3}\right) + c$, then $A - B =$

A. $\frac{1}{6}$

B. $\frac{1}{30}$

C. $\frac{-1}{30}$

D. $\frac{-1}{6}$

Answer: A

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