MATHS

BOOKS - RS AGGARWAL MATHS (HINGLISH)

METHODS OF INTEGRATION

Solved Examples

1. Evaluate : (i) $\int (3x+5)^7 dx$ (ii) $\int (4-9x)^5 dx$ (iii) $\int \frac{1}{(2-3x)^4} dx$ (iv) $\int \sqrt{ax+b}\, dx$

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2. Evaluate : (i) $\int \cos 2x \, dx$ (ii) $\int e^{(5x+3)} dx$ (iii) $\int \sec^2(3x+5) dx$ (iv) $\int \sin^3 x dx$

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3. Evaluate : (i) $\int \frac{\log x}{x} dx$ (ii) $\int \frac{\sec^2(\log x)}{x} dx$ (iii) $\frac{e^{\tan^{-1} x}}{(1+x^2)} dx$ (iv) $\int \frac{\sin \sqrt{x}}{\sqrt{x}} dx$

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4. Evaluate : (i) $\int \cos^3 x \sin x dx$ (ii) $\int \left(\sqrt{\sin x}\right) \cos x dx$ (iii) $\int \frac{\cos ec^2 x}{(1+\cot x)} dx$ (iv) $\int \frac{\sin x}{(3+4\cos x)^2} dx$

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5. Evaluate : (i) $\int \frac{2x}{(2x+1)^2} dx$ (ii) $\int \frac{(2+3x)}{(3-2x)} dx$

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6. Evaluate : (i) $\int \frac{3x^2}{(1+x^6)}dx$ (ii) $\int \frac{x^3}{(x^2+1)^3}dx$ (iii) $\frac{x^8}{(1-x^3)^{1/3}}dx$

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7. Evaluate $\int \frac{dx}{x\sqrt{x^6-1}}$

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8. Evaluate: $\int \frac{1}{\sqrt{x}+x}dx$

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9. Evaluate : (i) $\int \frac{(x-1)}{\sqrt{x+4}} dx$ (ii) $\int x\sqrt{x+2} dx$

(iii) $f(4x-2)\sqrt{x^2+x++1} dx$ (iv)

$$\int \frac{(4x+3)}{\sqrt{2x^2+3x+1}} dx$$

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10. Evaluate

(i) $\int \frac{(2x+5)}{(x^2+5x+9)} dx$ (ii) $\int \frac{(6x-7)}{(3x^2-7x+5)} dx$

(iii) $\int \frac{(\cos x - \sin x)}{(\cos x + \sin x)} dx$ (iv)

$$\int \frac{\sec x}{\log(\sec x + \tan x)} dx$$

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

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

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13. $\int \frac{\sqrt{\tan x}}{\sin x \cos x} dx$ is equal to.

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14. Evaluate $\int \frac{dx}{\left(\sqrt{2x+3}+\sqrt{2x-3}\right)}$.

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15. Evaluate :

(i) $\int \frac{1}{(1+\tan x)} dx$ (ii) $\int \frac{1}{(1+\cot x)} dx$

(iii) $\int \left(\frac{1-\tan x}{1+\tan x}\right) dx$ (iv) $\int \frac{\tan x}{(\sec x+\cos x)} dx$

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16. Evaluate : (i) $\int \tan x dx$ (ii) $\int \cot x dx$ (iii) $\int \sec x dx$ (iv) $\int \text{cosec x} \quad dx$

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17. Evaluate : (i) $\int \frac{(1+\cos x)}{(1-\cos x)} dx$ (ii) $\int \frac{(1+\sin x)}{(1+\cos x)} dx$

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18. Evaluate :

(i) $\int \frac{dx}{1+\sqrt{x}}$ (ii) $\int \frac{x+\sqrt{x+1}}{x+2} dx$

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19. Evaluate $\int \sqrt{\frac{1-x}{1+x}} dx.$

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20. Evaluate: $\int \frac{(3\sin x - 2)\cos x}{5 - \cos^2 x - 4\sin x} dx$

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21. Evaluate : (i) $\int \frac{\sin^2(x)}{2} dx$ (ii) $\int \tan^2 \frac{x}{2} dx$

(iii) $\int \cos^2 nx dx$ (iv) $\int \cos^5 x dx$

(v) $\int \sin^7 x dx$ (vi) $\int \sin^3(2x+1) dx$

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22. Evaluate :

$\int \cos mx \cos nx dx$, when (i) $m \neq n$ (ii) m=n.

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23. Evaluate : (i) $\int \sin 3x \sin 2x dx$ (ii) $\int \cos 3x \sin 2x dx$

(iii) $\int \cos 4x \cos x dx$ (iv) $\int \sin^3 x \cos^3 x dx$

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24. Evaluate : $\int \cos x \cos 2x \cos 3x dx.$

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25. $\int \sec^4 x \tan x dx = ?$

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26. Evaluate: $\int \sin^4 x \, dx$

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27. Evaluate : $\int \frac{\sin x}{\sin(x-\alpha)} dx.$

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28. Evaluate : (i) $\int \frac{\sin 4x}{\cos 2x} dx$ (ii) $\int \frac{\sin 4x}{\sin x} dx$

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

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30. Evaluate : $\int \frac{\sin^2 x}{(1+\cos x)^2}\,dx.$

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31. Evaluate : (i) $\int \sin x\sqrt{1-\cos 2x}\,dx$ (ii) $\int \frac{\cos 2x}{\sqrt{1+\cos 4x}}\,dx$

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32. Evaluate : (i) $\int \frac{dx}{a\sin x + b\cos x}$ (ii) $\int \frac{dx}{\sin x + \cos x}$

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33. Evaluate : (i) $\frac{dx}{4\cos x + 3\sin x}$ (ii) $\int \frac{dx}{(2\sin x + 3\cos x)^2}$

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34. Evaluate : $\int \frac{\cos x}{\left(\cos\frac{x}{2}+\sin\frac{x}{2}\right)^3}dx.$

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35. Evaluate : $\int \frac{dx}{\sqrt{1-\sin x}}$

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36. Evaluate : $\int \frac{\sin x}{\sqrt{1+\sin x}}dx.$

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37. Evaluate :

(i) $\int x \sec^2 x dx$ (ii) $\int x \sin 2x dx$

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38. Evaluate : $\int x^n \log x dx.$

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39. Evaluate : $\int x^2 \sin x dx.$

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40. $\int x \cos^2 x dx = ?$

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41. $\int \log x dx = ?$

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42. $\int \log(1 + x^2) dx.$

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43. Evaluate : $\int (\log x)^2 dx.$

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44. Evaluate : $\int \frac{\log x}{x^2} dx.$

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45. Evaluate the following integrals:

$\int e^{2x} \sin x dx$

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46. Evaluate : $\int\left(\frac{x-\sin x}{1-\cos x}\right)dx.$

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47. Evaluate : $\int x\tan^{-1}xdx$

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48. Evaluate : $\int x^2\sin^{-1}xdx.$

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49. Evaluate : (i) $\int \cos^{-1} x dx$ (ii) $\int \tan^{-1} x dx$ (iii) $\int \sec^{-1} x dx$

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50. Evaluate: $\int \left(\sin^{-1} x\right)^2 dx$

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51. Evaluate: $\int \frac{\sin^{-1} x}{(1-x^2)^{3\backslash 2}} dx$

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52. $\int \frac{x \tan^{-1} x}{(1+x^2)^{\frac{3}{2}}} dx$

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53. Evaluate : (i) $\int \sin^{-1}\left(3x - 4x^3\right) dx$ (ii) $\int \sin^{-1}\left(\frac{2x}{1+x^2}\right) dx$

(iii) $\int \tan^{-1} \sqrt{\frac{1-x}{1+x}} dx$ (iv) $\int \sin^{-1} \sqrt{\frac{x}{a+x}} dx$

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54. Evaluate : $\int x \cos^3 x \sin x dx.$

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55. Evaluate $\int \sin(\log x) dx.$

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

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57. $\int \sec^3 x dx = ?$

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58. $\int \tan^{-1} \sqrt{x} dx$ is equal to

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59. Evaluate : $\int \frac{\tan^{-1} x}{(1+x)^2} dx.$

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60. Evaluate: $\int \frac{\sin^{-1}\sqrt{x} - \cos^{-1}\sqrt{x}}{\sin^{-1}\sqrt{x} + \cos^{-1}\sqrt{x}}\, dx$

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61. $\int \frac{\sqrt{x^2+1}\left[\log\left(x^2+1\right) - 2\log x\right]}{x^4} \text{dx}$ is equal to

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62. $\int \frac{e^{-\frac{x}{2}}\sqrt{1-\sin x}}{1+\cos x}\, dx$

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63. Evaluate : (i) $\int e^x\left(\frac{1}{x}-\frac{1}{x^2}\right)dx$ (ii) $\int e^x\left(\frac{1}{x^2}-\frac{2}{x^3}\right)dx$

(iii) $\int e^x\left\{\sin^{-1}x+\frac{1}{\sqrt{1-x^2}}\right\}dx$ (iv) $\int e^x(\tan x+\log\sec x)dx$

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64. Evaluate $\int\frac{xe^x}{(1+x)^2}dx$

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65. If $\int e^x \left(\frac{1 - \sin x}{1 - \cos x} \right) dx = f(x) +$ Constant, then f(x) is equal to

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66. Evaluate: $\int e^x \left(\frac{2 + \sin 2x}{1 + \cos 2x} \right) dx$

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67. Evaluate: $\int e^x \frac{x^2 + 1}{(x + 1)^2} dx$

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68. $\int e^{2x}\left(\frac{\sin 4x - 2}{1 - \cos 4x}\right)dx$

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69. Evaluate : $\int e^{2x} \cdot (-\sin x + 2\cos x)dx.$

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70. $\int e^{ax}\cos(bx + c)dx$

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EXERCISE 13A VERY SHORT ANSWER QUESTIONS

1. $\int (2x+9)^5 dx$

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2. $\int (7-3x)^4 dx$

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3. $\int \sqrt{3x-5}dx$

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4. $\int \frac{1}{\sqrt{4x+3}}dx$

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5. $\int \frac{1}{\sqrt{3-4x}}dx$

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6. $\int \frac{1}{(2x-3)^{3/2}} dx$

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7. $\int e^{(2x-1)} dx$

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8. $\int e^{(1-3x)} dx$

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9. $\int 3^{(2-3x)}\,dx$

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10. $\int \sin 3x\,dx$

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EXERCISE 13A SHORT ANSWER QUESTIONS

1. $\int \cos(5+6x)\,dx$

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2. $\int \sin x \sqrt{1+\cos 2x}\, dx$

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3. $\int \text{cosec}^2(2x+5)\, dx$

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4. $\int \sin x \cos\, dx$

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5. $\int \sin^3 x \cos x dx$

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6. $\int \left(\sqrt{\cos x}\right) \sin x dx$

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7. $\int \frac{\sin^{-1} x}{\sqrt{1-x^2}} dx$

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

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9. $\int \frac{\cos(\log x)}{x}dx$

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10. $\int \frac{\text{cosec}^2(\log x)}{x}dx$

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11. $\int \frac{1}{x \log x} dx$

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12. $\int \frac{(x+1)(x+\log x)^2}{x} dx = ?$

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13. $\int \frac{(\log x)^2}{x} dx.$

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14. समाकलन ज्ञात कीजिए।

$$\frac{\cos\sqrt{x}}{\sqrt{x}}$$

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15. $\int e^{\tan x}\sec^2 x dx = ?$

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16. $\int e^{\cos^2}\sin 2x dx = ?$

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17. Integrate $\sin(ax+b)\cos(ax+b)$

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18. Evaluate $\int \cos^3 x dx$.

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19. $\int \frac{1}{x^2} e^{-\frac{1}{x}} dx =$

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

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

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22. Evaluate: $\int \frac{e^{2x}}{e^{2x} - 2} dx$

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23. $\int \cot x \log(\sin x) dx$

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24. $\int \frac{\cot x}{\log(\sin x)} dx$

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25. $\int 2x \sin\left(x^2 + 1\right) dx$

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26. $\int \sec x \log(\sec x + \tan x) dx$

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27. $\int \frac{\tan \sqrt{x} \sec^2 \sqrt{x}}{\sqrt{x}}$ dx

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28. $\int \frac{x \tan^{-1} x^2}{(1 + x^4)} dx$

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29. $\int \frac{x \sin^{-1} x^2}{\sqrt{1-x^4}} dx$

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

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31. $\int \frac{\sqrt{(2+\log x)}}{x} dx$

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32. $\int \frac{\sec^2 x}{(1+\tan x)} dx$

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33. $\int \frac{\sin x}{(1+\cos x)} dx$

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34. $\int \left(\frac{1+\tan x}{1-\tan x} \right) dx$

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35. (i) $\int \frac{(1+\tan x)}{(x+\log \sec x)} dx$, (ii) $\int \frac{(1-\sin 2x)}{(x+\cos^2 x)}$

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36. Evaluate : $\int \frac{\sin 2x}{a^2+b^2 \sin^2 x} dx$

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

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38. $\int \left(\frac{2\cos x - 3\sin x}{3\cos x + 2\sin x} \right) dx$

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39. $\int \frac{4x}{(2x^2 + 3)} dx$

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40. $\int \frac{(x + 1)}{(x^2 + 2x - 3)} dx$

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

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42. $\int \frac{(9x^2-4x+5)}{(3x^3-2x^2+5x+1)}dx$

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43. $\int \frac{\sec x \quad \text{cosec} \quad x}{\log(\tan x)}dx$

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44. $\int \frac{(1+\cos x)}{(x+\sin x)^3} dx$

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

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46. $\int \frac{(2x+3)}{\sqrt{x^2+3x-2}} dx$

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

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

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49. $\int \frac{dx}{(\sqrt{1-3x}-\sqrt{5-3x})}$

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50. $\int \frac{x^2}{1+x^6} dx$

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51. $\int \frac{x^3}{(1+x^8)} dx$

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

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53. $\int \frac{x^5}{\sqrt{1+x^3}} dx$

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

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55. $\int \frac{1}{x\sqrt{x^4-1}} dx$

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56. $\int x\sqrt{x-1}dx = ?$

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57. $\int (1-x)\sqrt{1+x}dx$

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58. $\int x\sqrt{x^2-1}dx = ?$

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59. $\int x\sqrt{3x-2}dx$

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60. $\int \frac{1}{x\cos^2(1+\log x)}dx = ?$

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61. $\int x^2 \sin x^3 dx = ?$

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62. $\int (2x+4)\sqrt{x^2+4x+3}dx$

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63. $\int \frac{\sin x}{(\sin x - \cos x)} dx = ?$

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64. $\int \frac{dx}{(1-\tan x)} = ?$

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65. $\int \frac{dx}{(1-\cot x)} = ?$

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

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

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68. $\int \frac{(x+1)(x+\log x)^2}{x} dx = ?$

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69. $\int x \sin^3 x^2 \cos x^2 dx = ?$

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70. $\int \frac{\sec^2 x}{\sqrt{1-\tan^2 x}} dx = ?$

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71. $\int e^{-x} \operatorname{cosec}^2\left(2e^{-x}+5\right) dx$

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72. Evaluate: $\int 2x \sec^3\left(x^2+3\right) \tan\left(x^2+3\right) dx$

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73. $\int \frac{\sin 2x}{(1+b\cos x)^2} dx$

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74. $\int \frac{dx}{(3-5x)}$

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75. $\int \sqrt{1+x} dx$

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76. $\int x^2 e^{x^3} \cos\left(e^{x^3}\right) dx$ is equalto

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77. $\int \frac{e^{m \tan^{-1} x}}{(1+x^2)} dx$

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78. $\int \frac{(x+1)e^x}{\cos^2(xe^x)} dx = ?$

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79. $\int \frac{e^{\sqrt{x}} \cos\left(e^{\sqrt{x}}\right)}{\sqrt{x}} dx = ?$

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80. $\int \sqrt{e^x - 1} dx$

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81. $\int \frac{dx}{(x - \sqrt{x})}$

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82. $\int \frac{\sec^2(2\tan^{-1} x)}{(1 + x^2)} dx$

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83. $\left(\frac{1+\sin 2x}{x+\sin^2 x}\right)dx$

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84. $\int\left(\frac{1-\tan x}{x+\log\cos x}\right)dx$

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85. $\int\frac{(1+\cot x)}{(x+\log\sin x)}dx.$

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86. Evaluate the following integrals:

$$\int \frac{\tan x \sec^2 x}{(1-\tan^2 x)} dx$$

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

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88. Evaluate: $\int \frac{dx}{x^{\frac{1}{2}} + x^{\frac{1}{3}}}$

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89. Evaluate: $\int \left(\sin^{-1} x\right)^2 dx$

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90. Evaluate : $\int \frac{2x\dot{\tan}^{-1} x}{1 + x^4} \backslash \, dx$

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

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92. $\int \frac{(\sin x + \cos x)}{\sqrt{\sin 2x}} dx$

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Objective Questions I

1. $\int (2x+3)^5 dx = ?$

A. $\frac{(2x+3)^6}{6}+C$

B. $\frac{(2x+3)^4}{8}+C$

C. $\frac{(2x+3)^6}{12}+C$

D. none of these

Answer: C

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2. $\int(3-5x)^7dx=\ ?$

A. $-5(3-5x)^6+C$

B. $\frac{(3-5x)^8}{-40}+C$

C. $\frac{-5(3-5x)^8}{8}+C$

D. none of these

Answer: B

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3. $\int \frac{1}{(2-3x)^4}+dx=?$

A. $\frac{1}{15(2-3x)^5}+C$

B. $\frac{1}{-12(2-3x)^3}+C$

C. $\frac{1}{9(2-3x)^3}+C$

D. none of these

Answer: C

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4. $\int\sqrt{ax+b}dx=?$

A. $\frac{2(ax+b)^{3/2}}{3a}+C$

B. $\frac{3(ax+b)^{3/2}}{2a}+C$

C. $\frac{1}{2\sqrt{ax+b}}+C$

D. none of these

Answer: A

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5. $\int \sec^2(7-4x)dx = ?$

A. $\frac{1}{4}\tan(7-4x)+C$

B. $\frac{-1}{4}\tan(7-4x)+C$

C. $4\tan(7-4x)+C$

D. $-4\tan(7-4x)+C$

Answer: B

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6. $\int \cos 3x dx = ?$

A. $-\frac{1}{3}\sin 3x + C$

B. $\frac{1}{3}\sin 3x + C$

C. $3\sin 3x + C$

D. $-3\sin 3x + C$

Answer: B

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7. $\int e^{(5-3x)}\,dx = ?$

A. $-3e^{(5-3x)} + C$

B. $\frac{1}{3}e^{(5-3x)} + C$

C. $\frac{e^{(5-3x)}}{-3} + C$

D. none of these

Answer: C

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8. $\int 2^{(3x+4)}\,dx = ?$

A. $\frac{3}{(\log 2)} \cdot 2^{(3x+4)} + C$

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

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

D. none of these

Answer: B

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9. $\int \tan^2 \frac{x}{2} dx = ?$

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

B. $\tan\frac{x}{2} + x + C$

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

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

Answer: D

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10. $\int\sqrt{1-\cos x}dx = ?$

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

B. $-2\sqrt{2}\cos\frac{x}{2}+C$

C. $\frac{-1}{2}\cos\frac{x}{2}+C$

D. $\frac{-1}{\sqrt{2}}\cos\frac{x}{2}+C$

Answer: B

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

A. $-\sqrt{2}\sin\left(\frac{\pi}{4}-\frac{x}{2}\right)+C$

B. $\sqrt{2}\sin\left(\frac{\pi}{4}-\frac{x}{2}\right)+C$

C. $-2\sqrt{2}\sin\left(\frac{\pi}{4}-\frac{x}{2}\right)+C$

D. none of these

Answer: C

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12. $\int \sin^3 x dx = ?$

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

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

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

D. none of these

Answer: A

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13. $\int \frac{\log x}{x} dx = ?$

A. $\frac{1}{2}(\log x)^2 + C$

B. $-\frac{1}{2}(\log x)^2 + C$

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

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

Answer: A

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14. $\int \frac{\sec^2(\log x)}{x} dx$

A. $\log(\tan x) + C$

B. $-\log(\tan x) + C$

C. $\tan(\tan x) + C$

D. $-\tan(\log x) + C$

Answer: C

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15. $\int \frac{1}{x(\log x)} dx = ?$

A. $\log|x| + C$

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

C. $(\log x)^2 + C$

D. $\log|\log x| + C$

Answer: D

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16. $\int e^{x^3} x^2 dx = ?$

A. $e^{x^3} + C$

B. $\frac{1}{3} e^{x^3} + C$

C. $\frac{1}{6} e^{x^3} + C$

D. none of these

Answer: B

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17. $\int \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$

A. $e^{\sqrt{x}} + C$

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

C. $2e^{\sqrt{x}} + C$

D. none of these

Answer: C

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18. Evaluate: $\int \frac{e^{\tan \hat{} ((-1)x)}}{1+x^2}\, dx$

A. $\frac{e^{\tan^{-1} x}}{x} + C$

B. $e^{\tan^{-1} x} + C$

C. $e^x \tan^{-1} x + C$

D. none of these

Answer: B

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

A. $2 \cos \sqrt{x} + C$

B. $-2 \cos \sqrt{x} + C$

C. $-\frac{\cos \sqrt{x}}{2} + C$

D. $\frac{\cos \sqrt{x}}{2} + C$

Answer: B

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20. $\int(\sqrt{\sin x})\cos x dx = ?$

A. $\frac{2}{3}(\cos x)^{\frac{3}{2}} + C$

B. $\frac{3}{2}(\cos x)^{\frac{3}{2}} + C$

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

D. $\frac{3}{2}(\sin x)^{\frac{3}{2}} + C$

Answer: C

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21. Evaluate: $\int \frac{1}{\sqrt{tan^{-1}x}(1+x^2)}dx$

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

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

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

D. none of these

Answer: B

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22. $\int \frac{\cot x}{\log(\sin x)} dx$

A. $\log|\cot x| + C$

B. $\log|\cot x \operatorname{cosec} x| + C$

C. $\log|\log \sin x| + C$

D. none of these

Answer: C

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23. $\int \frac{1}{x\cos^2(1+\log x)}dx = ?$

A. $\tan(1+\log x)+C$

B. $\cot(1+\log x)+C$

C. $\sec(1+\log x)+C$

D. none of these

Answer: A

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

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

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

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

D. none of these

Answer: C

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25. $\int \sec^5 x \tan x dx = ?$

A. $5\tan^5 x + C$

B. $\frac{1}{5}\tan^5 x + C$

C. $5\log|\cos x| + C$

D. none of these

Answer: B

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26. $\int \text{cosec}^3(2x+1)\cot(2x+1)dx = ?$

A. $\frac{1}{4}\text{cosec}^4(2x+1) + C$

B. $-\frac{1}{3}\text{cosec}^3(2x+1)+C$

C. $-\frac{1}{6}\text{cosec}^3(2x+1)+C$

D. $\frac{1}{2}\text{cosec}(2x+1)\cot(2x+1)+C$

Answer: C

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27. Find the value of $\int \frac{\tan \sin^{-1} x}{\sqrt{1-x^2}} dx$

A. $\log\left|\sec\left(\sin^{-1} x\right)\right|+C$

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

C. $\tan\left(\sin^1 x\right) + C$

D. none of these

Answer: A

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28. $\int \frac{\tan(\log x)}{x} dx = ?$

A. $x \tan(\log x) + C$

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

C. $\log|\cos(\log x)| + C$

D. $-\log|\cos(\log x)| + C$

Answer: D

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29. $\int e^x \cot(e^x) dx = ?$

A. $\cot(e^x) + C$

B. $\log|\sin e^x| + C$

C. $\log|\text{cosec } e^x| + C$

D. none of these

Answer: B

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30. $\int \frac{e^x}{\sqrt{1+e^x}} dx = ?$

A. $2\sqrt{1+e^x} + C$

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

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

D. none of these

Answer: A

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31. $\int \frac{x}{\sqrt{1-x^2}} dx = ?$

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

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

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

D. $-\sqrt{1-x^2} + C$

Answer: D

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32. $\int \frac{e^x(1+x)}{\cos^2(xe^x)}\,dx = \quad 2(\log)_e \cos(xe^x) + C$

(b) $\sec(xe^x) + C$ (c) $\tan(xe^x) + C$ (d) $\tan(x + e^x) + C$

A. $\tan(xe^x) + C$

B. $\cot(xe^x) + C$

C. $ex^x \tan x + C$

D. none of these

Answer: A

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

A. $\cot^{-1}(e^x) + C$

B. $\tan^{-1}(e^x) + C$

C. $\log|e^x + 1| + C$

D. none of these

Answer: B

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34. Evaluate $\int \frac{2^x}{\sqrt{1 - 4^x}} dx$

A. $\sin^{-1}(2^x) + C$

B. $\left(\log e^2\right)\sin^{-1}(2^x) + C$

C. $\left(\log e^2\right)\cos^{-1}(2^x) + C$

D. $\left(\log e^2\right)\sin^{-1}(2^x) + C$

Answer: D

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35. Evaluate $\int \frac{dx}{(e^x - 1)}$.

A. $\log|e^x - 1| + C$

B. $\log|1 - e^{-x}| + C$

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

D. none of these

Answer: B

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36. Evaluate: $\int \frac{1}{\sqrt{x} + x} dx$

A. $\log|1 + \sqrt{x}| + C$

B. $2\log|1 + \sqrt{x}| + C$

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

D. none of these

Answer: B

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

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

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

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

D. none of these

Answer: B

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

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

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

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

D. none of these

Answer: C

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39. $\int \frac{\sin x}{(1-\sin x)} dx = ?$

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

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

C. $-\log|1 - \sin x| + C$

D. none of these

Answer: A

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

A. $\frac{1}{2}\tan\frac{x}{2}+C$

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

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

D. none of these

Answer: C

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

A. $\frac{1}{(x-\sin x)} + C$

B. $\log|x-\sin x| + C$

C. $\log\left|\tan\frac{x}{2}\right| + C$

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

Answer: D

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

A. $2\log\left|\sec\frac{x}{2}\right| + C$

B. $2\log\left|\cos\frac{x}{2}\right| + C$

C. $2\log\left|\sec\left(\frac{\pi}{4}-\frac{x}{2}\right)\right| + C$

D. $2\log\left|\cos\left(\frac{\pi}{4}-\frac{x}{2}\right)\right| + C$

Answer: D

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43. $\int \sqrt{e^x} dx = ?$

A. $\sqrt{e^x} + C$

B. $2\sqrt{e^x} + C$

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

D. none of these

Answer: B

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44. $\int \frac{\cos x}{(1 + \cos x)} dx = ?$

A. $x + \tan\frac{x}{2} + C$

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

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

D. none of these

Answer: C

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45. Evaluate $\int \sec^2 x \operatorname{cosec}^2 x dx.$

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

B. $\tan x + \cot x + C$

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

D. none of these

Answer: A

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46. Evaluate the following integrals :

$$\int \frac{1 - \cos 2x}{1 + \cos 2x} dx$$

A. $\tan x + x + C$

B. $\tan x - x + C$

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

D. none of these

Answer: B

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47. $\int\left(\frac{1+\cos x}{1-\cos x}\right)dx$

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

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

C. $2\cot\frac{x}{2}+x+C$

D. none of these

Answer: A

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

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

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

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

D. none of these

Answer: B

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

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

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

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

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

Answer: D

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

A. $\sin x + x \cos \alpha + C$

B. $2 \sin x + x \cos \alpha + C$

C. $2 \sin x + 2x \cos \alpha + C$

D. none of these

Answer: C

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51. $\int \tan^{-1}\left\{\sqrt{\frac{1-\cos 2x}{1+\cos 2x}}\right\} dx = ?$

A. $2x^2 + C$

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

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

D. none of these

Answer: B

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

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

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

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

D. none of these

Answer: A

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

A. $2\tan x + x - 2\sec x + C$

B. $2\tan x - x + 2\sec x + C$

C. $2\tan x - x - 2\sec x + C$

D. none of these

Answer: B

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

A. $\frac{x^3}{3} + x + \tan^{-1} x + C$

B. $\frac{-x^3}{3} + x - \tan^{-1} x + C$

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

D. none of these

Answer: C

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55. $\int \frac{\sin(x-\alpha)}{\sin(x+\alpha)} dx = ?$

A. $x\cos 2\alpha - \sin 2\alpha \cdot \log|\sin(x+\alpha)| + C$

B. $x\cos 2\alpha + \sin 2\alpha \cdot \log|\sin(x+\alpha)| + C$

C. $x\cos 2\alpha + \sin\alpha \cdot \log|\sin(x+\alpha)| + C$

D. none of these

Answer: A

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56. $\int \frac{1}{\sqrt{x+3}-\sqrt{x+2}}\,dx$

A. $\frac{2}{3}(x+3)^{\frac{3}{2}} - \frac{2}{3}(x+2)^{\frac{3}{2}} + C$

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

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

D. none of these

Answer: B

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57. $\int\left(\frac{1+\tan x}{1-\tan x}\right)dx$

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

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

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

D. none of these

Answer: A

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58. $\int \frac{3x^2}{1+x^6} dx$

A. $\sin^{-1} x^3 + C$

B. $\cos^{-1} x^3 + C$

C. $\tan^{-1} x^3 + C$

D. $\cot^{-1} x^3 + C$

Answer: C

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59. int(dx)/(xsqrt(x^(6)-1))=?`

A. $\frac{1}{3}\sec^{-1}x^3+C$

B. $\frac{1}{3}\text{cosec}^{-1}x^3+C$

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

D. none of these

Answer: A

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60. $\int(2x+1)\left(\sqrt{x^2+x+1}\right)dx$

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

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

C. $\frac{3}{2}(2x+1)^{3/2}+C$

D. none of these

Answer: B

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61. $\int \frac{dx}{\sqrt{2x+3}+\sqrt{2x-3}}$

A. $\frac{1}{18}(2x+3)^{\frac{3}{2}}+\frac{1}{18}(2x-3)^{\frac{3}{2}}+C$

B. $\frac{1}{18}(2x+3)^{\frac{3}{2}}-\frac{1}{18}(2x-3)^{\frac{3}{2}}+C$

C. $\frac{1}{12}(2x+3)^{\frac{3}{2}} - \frac{1}{12}(2x-3)^{\frac{3}{2}} + C$

D. none of these

Answer: B

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62. $\int \tan x dx = ?$

A. $\log|\cos x| + C$

B. $-\log|\cos x| + C$

C. $\log|\sin x| + C$

D. $-\log|\sin x| + C$

Answer: B

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63. $\int \sec x dx = ?$

A. $\log|\sec x - \tan x| + C$

B. $-\log|\sec x + \tan x| + C$

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

D. none of these

Answer: C

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64. $\int \text{cosec} x dx = ?$

A. $\log|\text{cosec} x - \cot x| + C$

B. $-\log|\text{cosec} x - \cot x| + C$

C. $\log|\text{cosec} \quad x + \cot x| + C$

D. none of these

Answer: A

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

A. $\tan\frac{x}{2} + 2\log\left|\cos\frac{x}{2}\right| + C$

B. $-\tan\frac{x}{2} + 2\log\left|\cos\frac{x}{2}\right| + C$

C. $\tan\frac{x}{2} - 2\log\left|\cos\frac{x}{2}\right| + C$

D. none of these

Answer: C

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66. $\int \frac{\tan x}{\sec x + \cos x} dx$

A. $\tan^{-1}(\cos x) + C$

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

C. $\cot^{-1}(\cos x) + C$

D. none of these

Answer: B

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67. $\int \sqrt{\frac{1+x}{1-x}} dx = ?$

A. $\sin^{-1} x + \sqrt{1 - x^2} + C$

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

C. $\sin^{-1} x - \sqrt{1 - x^2} + C$

D. none of these

Answer: C

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68. $\int \frac{1}{x^2} e^{-\frac{1}{x}} dx =$

A. $e^{-1/x} + C$

B. $-e^{-1/x}+C$

C. $\frac{e^{-1/x}}{x}+C$

D. none of these

Answer: A

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69. $\int \frac{x^3}{(1+x^8)}dx$

A. $\tan^{-1}x^4+C$

B. $4\tan^{-1}x^4+C$

C. $\frac{1}{4}\tan^{-1}x^4+C$

D. none of these

Answer: C

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70. $\int\frac{(x+1)(x+\log x)^2}{x}dx=?$

A. $\frac{1}{3}(x+\log x)^3+C$

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

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

D. none of these

Answer: A

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71. Evaluate : $\int \frac{2x\tan^{-1}x}{1+x^4} \backslash \, dx$

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

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

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

D. none of these

Answer: C

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72. $\int \frac{dx}{(2-3x)} = ?$

A. $-3\log|2-3x| + C$

B. $-\frac{1}{3}\log|2-3x| + C$

C. $-\log|2-3x| + C$

D. none of these

Answer: B

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73. $\int x\sqrt{x^2-1}dx = ?$

A. $\frac{2}{3}(x^2-1)^{\frac{3}{2}}+C$

B. $\frac{1}{3}(x^2-1)^{\frac{3}{2}}+C$

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

D. none of these

Answer: B

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74. $\int 3^{(5-3x)}\,dx = ?$

A. $\dfrac{-3^{(5-3x)}}{3(\log 3)} + C$

B. $\dfrac{3^{(4-3x)}}{(\log 3)} + C$

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

D. none of these

Answer: A

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75. $\int e^{\tan x}\sec^2 x dx = ?$

A. $e^{\tan x} + \tan x + C$

B. $e^{\tan x} \cdot \tan x + C$

C. $e^{\tan x} + C$

D. none of these

Answer: C

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76. $\int e^{\cos^2} \sin 2x dx = ?$

A. $e^{\cos^2 x} + C$

B. $-e^{\cos^2 x}+C$

C. $e^{\sin^2 x}+C$

D. none of these

Answer: B

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77. $\int x\sin^3 x^2\cos x^2 dx = ?$

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

B. $\frac{1}{8}\sin^4 x^2+C$

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

D. none of these

Answer: B

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78. $\int \frac{e^{\sqrt{x}} \cos\left(e^{\sqrt{x}}\right)}{\sqrt{x}} dx = ?$

A. $\sin\left(e^{\sqrt{x}}\right) + C$

B. $\frac{1}{2}\sin\left(e^{\sqrt{x}}\right) + C$

C. $2\sin\left(e^{\sqrt{x}}\right) + C$

D. none of these

Answer: C

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79. $\int x^2 \sin x^3 dx = ?$

A. $\cos x^3 + C$

B. $-\cos x^3 + C$

C. $-\frac{1}{3}\cos x^3 + C$

D. none of these

Answer: C

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80. $\int \frac{(x+1)e^x}{\cos^2(xe^x)} dx = ?$

A. $\tan(xe^x) + C$

B. $-\tan(xe^x) + C$

C. $\cot(xe^x) + C$

D. none of these

Answer: A

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81. $\int \frac{1}{x\sqrt{x^4-1}}dx$

A. $\sec^{-1}x^2+C$

B. $\frac{1}{2}\sec^{-1}x^2+C$

C. $\text{cosec}^{-1}x^2+C$

D. none of these

Answer: B

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82. $\int x\sqrt{x-1}dx = ?$

A. $\frac{2}{3}(x-1)^{\frac{3}{2}} + C$

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

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

D. none of these

Answer: C

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83. $\int x\sqrt{x^2-x}dx = ?$

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

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

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

D. none of these

Answer: A

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84. $\int \frac{dx}{\left(1+\sqrt{x}\right)}=?$

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

B. $\sqrt{x}+\log|1+\sqrt{x}|+C$

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

D. none of these

Answer: C

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85. $\int\sqrt{e^x-1}dx$

A. $\frac{3}{2}(e^x-1)^{\frac{3}{2}}+C$

B. $\frac{1}{2}(e^x-1)^{\frac{1}{2}}+C$

C. $\frac{2}{3}(e^x - 1)^{\frac{3}{2}} + C$

D. none of these

Answer: D

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86. $\int \frac{\sin x}{(\sin x - \cos x)} dx = ?$

A. $\frac{1}{2}x - \frac{1}{2}\log|\sin x - \cos x| + C$

B. $\frac{1}{2}x + \frac{1}{2}\log|\sin x - \cos x| + C$

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

D. none of these

Answer: B

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87. $\int \frac{dx}{(1-\tan x)} = ?$

A. $\frac{1}{2}\log|\sin x - \cos x| + C$

B. $\frac{1}{2}x + \frac{1}{2}\log|\sin x - \cos x| + C$

C. $\frac{1}{2}x - \frac{1}{2}\log|\sin x - \cos x| + C$

D. none of these

Answer: C

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88. $\int \frac{dx}{(1-\cot x)} = ?$

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

B. $\frac{1}{2}\log|\sin x - \cos x| + C$

C. $\frac{1}{2}x - \frac{1}{2}\log|\sin x - \cos x| + C$

D. $\frac{1}{2}x + \frac{1}{2}\log|\sin x - \cos x| + C$

Answer: D

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89. $\int \frac{\sec^2 x}{\sqrt{1-\tan^2 x}} dx = ?$

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

B. $\cos^{-1}(\sin x) + C$

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

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

Answer: A

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

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

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

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

D. none of these

Answer: C

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91. $\int \frac{\sin^6 x}{\cos^8 x} dx = ?$

A. $\frac{1}{7}\tan^7 x + C$

B. $\frac{1}{7}\sec^7 x + C$

C. $\log\left|\cos^6 x\right| + C$

D. none of these

Answer: A

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92. $\int \sec^5 x \tan x dx = ?$

A. $\frac{1}{5}\tan^5 x + C$

B. $\frac{1}{5}\sec^5 x + C$

C. $5\log|\cos x| + C$

D. none of these

Answer: B

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93. $\int \tan^5 x dx$

A. $\frac{1}{6}\tan^6 x + C$

B. $\frac{1}{4}\tan^4 x + \frac{1}{2}\tan^2 x + \log|\sec x| + C$

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

D. none of these

Answer: C

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94. $\int \sin^3 x \cos^3 x dx = ?$

A. $-\frac{1}{4}\cos^4 x + \frac{1}{6}\cos^6 x + C$

B. $\frac{1}{4}\sin^4 x - \frac{1}{6}\sin^6 x + C$

C. $\frac{1}{4}\sin^4 x + \frac{1}{6}\cos^6 x + C$

D. none of these

Answer: B

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95. $\int \sec^4 x \tan x dx = ?$

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

B. $\frac{1}{2}\tan^2 x + \frac{1}{4}\tan^4 x + C$

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

D. none of these

Answer: B

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96. $\int \frac{\log \tan x}{\sin x \cos x} dx = ?$

A. $\log\{\log(\tan x)\} + C$

B. $\frac{1}{2}(\log \tan x)^2 + C$

C. $\log(\sin x \cos x) + C$

D. none of these

Answer: B

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97. $\int \sin^3(2x+1)dx = ?$

A. $\frac{1}{8}\sin^4(2x+1)+C$

B. $\frac{1}{2}\cos(2x+1)+\frac{1}{3}\cos^3(2x+1)+C$

C. $-\frac{1}{2}\cos(2x+1)+\frac{1}{6}\cos^3(2x+1)+C$

D. none of these

Answer: C

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98. $\int \frac{\sqrt{\tan x}}{\sin x \cos x} dx$ is equal to.

A. $2\sqrt{\tan x} + C$

B. $2\sqrt{\cot x} + C$

C. $2\sqrt{\sec x} + C$

D. none of these

Answer: A

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99. $\frac{(\cos + \sin x)}{(1 - \sin 2x)} dx = ?$

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

B. $\frac{1}{(\cos x - \sin x)} + C$

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

D. none of these

Answer: B

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100. $\int \sqrt{e^x - 1} dx = ?$

A. $\frac{2}{3}(e^x - 1)^{\frac{3}{2}} + C$

B. $\frac{1}{2} \cdot \frac{e^x}{\sqrt{e^x - 1}} + C$

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

D. none of these

Answer: C

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101. $\int \frac{1}{\sqrt{\sin^3 x \cos x}} dx = ?$

A. $2\sqrt{\tan x} + C$

B. $2\sqrt{\cot x} + C$

C. $-2\sqrt{\tan x} + C$

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

Answer: D

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Exercise 13B

1. Evaluate the following integrals:

(i) $\int \sin^2 x dx$ (ii) $\int \cos^2 x dx$

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2. Evaluate the following integrals:

(i) $\int \cos^2(x/2) dx$ (ii) $\int \cot^2(x/2) dx$

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3. Evaluate the following integrals:

(i) $\int \sin^2 nx dx$ (ii) $\int \sin^5 x dx$

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4. $\int \cos^3(3x+5)dx$

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5. Evaluate the following integrals:

$\int \sin^7(3-2x)dx$

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6. Evaluate the following integrals:

(i) $\int\left(\frac{1-\cos 2x}{1+\cos 2x}\right)dx$ (ii) $\int\left(\frac{1+\cos 2x}{1-\cos 2x}\right)dx$

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7. Evaluate the following integrals:

(i) $\int\left(\frac{1-\cos x}{1+\cos x}\right)dx$ (ii) $\int\left(\frac{1+\cos x}{1-\cos x}\right)dx$

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8. Evaluate the following integrals:

$$\int \sin 3x \cos 4x dx$$

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9. Evaluate the following integrals:

$$\int \cos 4x \cos 3x dx$$

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10. Evaluate the following integrals:

$$\int \sin 4x \sin 8x dx$$

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11. Evaluate the following integrals:

$$\int \sin 6x \cos dx$$

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12. Evaluate the following integrals:

$$\int \sin x \sqrt{1 + \cos 2x} dx$$

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13. Evaluate the following integrals:

$$\int \cos^4 x dx$$

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14. Evaluate the following integrals:

$$\int \cos 2x \cos 4x \cos 6x dx$$

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15. Evaluate the following integrals:

$$\int \sin^3 x \cos x dx$$

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16. Evaluate the following integrals:

$$\int \sec^4 dx$$

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17. Evaluate the following integrals:

$$\int \cos^3 x \sin^4 dx$$

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18. Evaluate the following integrals:

$$\int \cos^4 x \sin^3 x dx$$

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19. Evaluate the following integrals:

$$\int \sin^{2/3} x \cos^3 x dx$$

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20. Evaluate the following integrals:

$$\int \cos^{3/5} x \sin^3 x dx$$

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21. Evaluate: $\int \cos ec^4\, 2x\, dx$

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22. Evaluate the following integrals:

$$\int \frac{\cos 2x}{\cos x} dx$$

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23. Evaluate the following integrals:

$$\int \frac{\cos x}{\cos(x+\alpha)} dx$$

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24. Evaluate the following integrals:

$$\int \cos^3 x \sin 2x dx$$

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25. Evaluate the following integrals:

$$\int \frac{\cos^9 x}{\sin x} dx$$

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26. Evaluate the following integrals:

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

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27. Evaluate the following integrals:

$$\int \frac{\sin^2 x}{(1+\cos x)^2} dx$$

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28. Evaluate the following integrals:

$$\int \frac{dx}{(3\cos x + 4\sin x)}$$

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29. Evaluate the following integrals:

$$\int \frac{dx}{(a\cos x + b\sin x)^2}, a > 0 \text{ and } b > 0$$

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30. Evaluate the following integrals:

$$\int \frac{dx}{(\cos x - \sin x)}$$

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31. Evaluate the following integrals:

$$\int (2\tan x - 3\cot x)^2 dx$$

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32. Evaluate the following integrals:

$$\int \sin x \sin 2x \sin 3x$$

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33. Evaluate the following integrals:

$$\int\left(\frac{1-\cot x}{1+\cot x}\right)dx$$

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34. Evaluate the following integrals:

$$\int\frac{dx}{(2\sin x+\cos x+3)}$$

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Exercise 13C

1. Evaluate the following integrals:

$$\int xe^x dx$$

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2. Evaluate the following integrals:

$$\int x \cos x dx$$

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3. Evaluate the following integrals:

$$\int xe^{2x} dx$$

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4. Evaluate the following integrals:

$$\int x \sin 3x dx$$

Watch Video Solution

5. Evaluate the following integrals:

$$\int x \cos 2x dx$$

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6. Evaluate the following integrals:

$$\int x \log 2x dx$$

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7. $\int x \text{cosec}^2 x dx = ?$

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8. Evaluate the following integrals:

$$\int x^2 \cos x dx$$

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9. Evaluate the following integrals:

$$\int x \sin^2 x dx$$

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10. Evaluate the following integrals:

$$\int x \tan^2 x dx$$

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11. Evaluate the following integrals:

$$\int x^2 e^x dx$$

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12. Evaluate the following integrals:

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

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13. Evaluate the following integrals:

$$\int x^2 e^{3x} dx$$

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14. Evaluate the following integrals:

$$\int x^2 \sin^2 x dx$$

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15. Evaluate: $\int x^3 \log 2x \, dx$

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16. Evaluate the following integrals:

$$\int x \cdot \log(x+1)dx$$

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17. Evaluate the following integrals:

$$\int \frac{\log x}{x^n} dx$$

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18. Evaluate the following integrals:

$$\int 2x^3 e^{x^2} dx$$

Watch Video Solution

19. Evaluate the following integrals:

$$\int x \sin^3 x dx$$

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20. $\int x \cos^2 x dx = ?$

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21. Evaluate the following integrals:

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

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22. Evaluate the following integrals:

$$\int \sin x \log(\cos x) dx$$

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23. Evaluate the following integrals:

$$\int x \sin x \cos x dx$$

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24. Evaluate the following integrals:

$$\int \cos \sqrt{x} dx$$

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25. Evaluate the following integrals:

$$\int \text{cosec}^3 x\, dx$$

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26. Evaluate the following integrals:

$$\int x \sin^3 x \cos x\, dx$$

Watch Video Solution

27. $\int \sin x \log(\cos x)\, dx = \ ?$

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28. Evaluate the following integrals:

$$\int \frac{\log(\log x)}{x} dx$$

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29. Evaluate the following integrals:

$$\int \log\left(2 + x^2\right) dx$$

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30. Evaluate the following integrals:

$$\int \frac{x}{(1+\sin x)} dx$$

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31. Evaluate the following integrals:

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

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32. Evaluate the following integrals:

$$\int e^x \cos 2x \cos 4x dx$$

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33. Evaluate the following integrals:

$$\int e^{\sqrt{x}} dx$$

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34. Evaluate the following integrals:

$$\int e^{\sin x} \sin 2x \, dx$$

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35. Evaluate the following integrals:

$$\int \frac{x \sin^{-1} x}{\sqrt{1-x^2}} dx$$

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36. Evaluate the following integrals:

$$\int \frac{x^2 \tan^{-1} x}{(1+x^2)} dx$$

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37. Evaluate the following integrals:

$$\int \frac{\log(x+2)}{(x+2)^2} dx$$

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38. Evaluate the following integrals:

$$\int x \sin^{-1} x dx$$

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39. Evaluate the following integrals:

$$\int x \cos^{-1} x dx$$

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40. Evaluate the following integrals:

$$\int \cot^{-1} x \, dx$$

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41. Evaluate the following integrals:

$$\int x \cot^{-1} x \, dx$$

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42. Evaluate the following integrals:

$$\int x^2 \cot^{-1} x \, dx$$

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43. Evaluate the following integrals:

$$\int \sin^{-1} \sqrt{x} \, dx$$

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44. Evaluate the following integrals:

$$\int \cos^{-1}\sqrt{x}\,dx$$

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45. Evaluate the following integrals:

$$\int \cos^{-1}\left(4x^3 - 3x\right)dx$$

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46. Evaluate the following integrals:

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

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47. Evaluate the following integrals:

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

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48. Evaluate the following integrals:

$$\int \tan^{-1}\left(\frac{3x - x^3}{1 - 3x^2}\right) dx$$

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49. Evaluate the following integrals:

$$\int \frac{\sin^{-1} x}{x^2} dx$$

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50. Evaluate the following integrals:

$$\int \frac{\tan x \sec^2 x}{(1 - \tan^2 x)} dx$$

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51. Evaluate the following integrals:

$$\int e^{3x} \sin 4x dx$$

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52. Evaluate the following integrals:

$$\int e^{2x} \sin x dx$$

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53. Evaluate the following integrals:

$$\int e^{2x} \sin x \cos x dx$$

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54. Evaluate the following integrals:

$$\int e^{2x} \cos(3x + 4) dx$$

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55. Evaluate the following integrals:

$$\int e^{-x} \cos x dx$$

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56. Evaluate the following integrals:

$$\int e^x (\sin x + \cos x) dx$$

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57. Evaluate the following integrals:

$$\int e^x \left(\cot x - \operatorname{cosec}^2 x\right) dx$$

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58. Evaluate the following integrals:

$$\int e^x \sec x(1+\tan x)dx$$

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59. Evaluate the following integrals:

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

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60. $\int e^x(\cot x+\log\sin x)dx = ?$

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61. $\int e^x(\tan x - \log\cos x)dx$

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62. $\int e^x[\sec x + \log(\sec x + \tan x)]dx = ?$

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63. Evaluate the following integrals:

$$\int e^x \left(\frac{1 + \sin x \cos x}{\cos^2 x} \right) dx$$

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64. Evaluate the following integrals:

$$\int e^x \left(\frac{\sin x \cos - 1}{\sin^{2x}} \right) dx$$

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65. Evaluate the following integrals:

$$\int e^x \left(\frac{\cos x + \sin x}{\cos^2 x} \right) dx$$

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66. Evaluate the following integrals:

$$\int e^x \left(\frac{2 - \sin 2x}{1 - \cos 2x} \right) dx$$

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67. $\int e^x \left(\frac{1 + \sin x}{1 + \cos x} \right) dx = ?$

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68. Evaluate: $\int e^x \left(\frac{\sin 4x - 4}{1 - \cos 4x} \right) dx$

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69. Evaluate the following integrals:

$$\int \frac{e^x \left[\sqrt{1 - x^2} \sin^{-1} x + 1 \right]}{\sqrt{1 - x^2}} dx$$

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70. Evaluate the following integrals:

$$\int e^x \left(\frac{1 + x \log x}{x} \right) dx$$

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71. Evaluate the following integrals:

$$\int e^x \cdot \frac{x}{(1+x)^2} dx$$

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72. Evaluate the following integrals:

$$\int e^x \frac{(x-1)}{(x+1)^3} dx$$

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73. Evaluate the following integrals:

$$\int e^x \frac{(2-x)}{(1-x)^2} dx$$

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74. Evaluate the following integrals:

$$\int e^x \cdot \frac{(x-3)}{(x-1)^3} dx$$

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75. Evaluate the following integrals:

$$\int e^{3x} \left(\frac{3x-1}{9x^2} \right) dx$$

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76. Evaluate the following integrals:

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

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

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78. Evaluate the following integrals:

$$\int e^{2x} \left(\frac{2x-1}{4x^2} \right) dx$$

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79. Evaluate the following integrals:

$$\int e^x \left(\log x + \frac{1}{x^2} \right) dx$$

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80. Evaluate the following integrals:

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

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81. $\int [\sin(\log x) + \cos(\log x)]\,dx$

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82. Evaluate the following integrals:

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

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83. Evaluate the following integrals:

$$\int \left\{ \log(\log x) + \frac{1}{(\log x)^2} \right\} dx$$

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84. Evaluate: $\int \frac{\sin^{-1}\sqrt{x} - \cos^{-1}\sqrt{x}}{\sin^{-1}\sqrt{x} + \cos^{-1}\sqrt{x}}\, dx$

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85. Evaluate the following integrals:

$\int 5^{5^{5^x}} \cdot 5^{5^x} \cdot 5^x dx$

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86. Evaluate the following integrals:

$$\int e^{2x}\left(\frac{1+\sin 2x}{1+\cos 2x}\right)dx$$

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87. Evaluate the following integrals:

$$\int e^{2x}\left(\frac{1+\sin 2x}{1+\cos 2x}\right)dx$$

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Objective Questions Ii

1. $\int xe^x dx = ?$

A. $e^x(1-x)+C$

B. $e^x(x+1)+C$

C. $e^x(x-1)+C$

D. none of these

Answer: C

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2. $\int xe^{2x} dx = ?$

A. $\frac{1}{2}xe^{2x} + \frac{1}{4}e^{2x} + C$

B. $\frac{1}{2}xe^{2x} - \frac{1}{4}e^{2x} + C$

C. $2xe^{2x} + 4e^{2x} + C$

D. none of these

Answer: B

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

A. $\frac{1}{2}x \sin 2x + \frac{1}{4}\cos 2x + C$

B. $\frac{1}{2}x\sin 2x - \frac{1}{4}\cos 2x + C$

C. $2x\sin 24\cos 2x + C$

D. none of these

Answer: A

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4. $\int x\sec^2 x dx = ?$

A. $x\tan x - \log|\cos x| + C$

B. $x\tan x + \log|\cos x|C$

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

D. none of these

Answer: B

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5. $\int x \sin 2x dx = ?$

A. $\frac{1}{2}x \cos 2x + \frac{1}{4}\sin 2x + C$

B. $-\frac{1}{2}x \cos 2x - \frac{1}{4}\sin 2x + C$

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

D. none of these

Answer: C

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6. $\int x \log x dx = ?$

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

B. $\frac{1}{2}x^2 \log x + \frac{1}{4}x^2 + C$

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

D. none of these

Answer: C

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7. $\int x \operatorname{cosec}^2 x dx = ?$

A. $x \cot x - \log|\sin x| + C$

B. $-x \cot x + \log|\sin x| + C$

C. $x \tan x - \log|\sec x| + C$

D. none of these

Answer: B

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8. $\int x \sin x \cos x dx = ?$

A. $-\frac{1}{4}x \sin 2x + \frac{1}{8}\cos 2x + C$

B. $\frac{1}{4}x \cos 2x - \frac{1}{8}\sin 2x + C$

C. $\frac{1}{2}x \sin 2x + \frac{1}{4}\cos 2x + C$

D. $-\frac{1}{4}x \cos 2x + \frac{1}{8}\sin 2x + C$

Answer: D

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9. $\int x \cos^2 x dx = ?$

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. none of these

Answer: B

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10. $\int \frac{\log x}{x^2} dx = ?$

A. $-\frac{1}{x}(\log x+1)+C$

B. $\frac{1}{x}(\log x-1)+C$

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

D. none of these

Answer: A

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11. $\int \log x dx = ?$

A. $\frac{1}{x}+C$

B. $\frac{1}{2}(\log x)^2 + C$

C. $x(\log x + 1) + C$

D. $x(\log x - 1) + C$

Answer: D

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12. $\int \log_{10} x dx =$

A. $\frac{1}{x}\log_e 10 + C$

B. $\frac{1}{x}\log_{10} e + C$

C. $x(\log x - 1)\log_e 10 + C$

D. $x(\log x - 1)\log_{10} e + C$

Answer: D

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13. $\int (\log x)^2 dx = ?$

A. $\frac{2\log x}{x} + C$

B. $\frac{1}{3}(\log x)^3 + C$

C. $x(\log x)^2 - 2x\log x + 2x + C$

D. $x(\log x)^2 - 2x\log x - 2x + C$

Answer: C

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14. $\int e^{\sqrt{x}}dx = ?$

A. $e^{\sqrt{x}} + \sqrt{x} + C$

B. $\frac{1}{2}e^{\sqrt{x}}(\sqrt{x}+1) + C$

C. $2e^{\sqrt{x}}(\sqrt{x}-1) + C$

D. none of these

Answer: C

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15. $\int \cos \sqrt{x} dx = ?$

A. $\sin \sqrt{x} + \cos \sqrt{x} + C$

B. $\frac{1}{2}\left(\sqrt{x} \sin \sqrt{x} - \cos \sqrt{x}\right) + C$

C. $2\left[\sqrt{x} \sin \sqrt{x} + \cos \sqrt{x}\right] + C$

D. none of these

Answer: C

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16. $\int \cos(\log x)dx = ?$

A. $\frac{x}{2}[\cos(\log x) - \sin(\log x)] + C$

B. $\frac{x}{2}[\cos(\log x) + \sin(\log x)] + C$

C. $2x[\cos(\log x) + \sin(\log x)] + C$

D. $2x[\cos(\log x) - \sin(\log x)] + C$

Answer: B

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17. $\int \sec^3 x dx = ?$

A. $\frac{1}{2}\{\sec x \tan x - \log|\sec x + \tan x|\} + C$

B. $\frac{1}{2}\{\sec x \tan x + \log|\sec x + \tan x|\} + C$

C. $2\{\sec x \tan x + \log|\sec x + \tan x|\} + C$

D. none of these

Answer: B

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

A. x log x+C

B. $\frac{x}{\log x}+C$

C. $x+\frac{1}{\log x}+C$

D. none of these

Answer: B

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19. $\int 2x^3 e^{x^2} dx$

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

B. $e^{x^2}\left(x^2+1\right)+C$

C. $e^{x^2}(x+1)+C$

D. none of these

Answer: A

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20. $\int (x2^x) dx = ?$

A. $\frac{2^x}{(\log 2)}(x + \log 2) + C$

B. $\frac{2^x}{(\log 2)}(x \log 2 - 1) + C$

C. $\frac{x \cdot 2^x}{(\log 2)} + \frac{2^x}{(\log 2)^2} + C$

D. none of these

Answer: B

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21. $\int x \cot^2 x dx = ?$

A. $-x \cot x + \frac{x^2}{2} + \log|\sin x| + C$

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

C. $-x\cot x+\frac{x^2}{2}-\log|\sin x|+C$

D. none of these

Answer: B

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

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

B. $-\sqrt{x}\cos\sqrt{x}-2\sin\sqrt{x}-C$

C. $-2\sqrt{x}\cos\sqrt{x}+2\sin\sqrt{x}+C$

D. none of these

Answer: C

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23. $\int e^{\sin x}\sin 2x\,dx$

A. $(2\sin x)e^{\sin x}+C$

B. $(2\cos x)e^{\sin x}+C$

C. $2e^{\sin x}(\sin x+1)+C$

D. $2e^{\sin x}(\sin x - 1) + C$

Answer: D

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24. $\int \frac{\sin^{-1} x}{(1-x^2)^{\frac{3}{2}}} dx$

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

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

C. $\frac{x\sin^{-1} x}{\sqrt{1-x^2}} + \frac{1}{2}\log|1-x^2| + C$

D. none of these

Answer: C

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25. $\int \frac{x \tan^{-1} x}{(1+x^2)^{\frac{3}{2}}} dx$

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

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

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

D. none of these

Answer: B

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26. $\int x.\tan^{-1}x dx$

A. $\frac{1}{2}\tan^{-1}x + \log(1+x^2) - \frac{1}{2}x + C$

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

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

D. none of these

Answer: C

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27. $\int \tan^{-1}\sqrt{x}dx$ is equal to

A. $(x-1)\tan^{-1}\sqrt{x}+\sqrt{x}+C$

B. $(x+1)\tan^{-1}\sqrt{x}-\sqrt{x}+C$

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

D. none of these

Answer: B

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28. Evaluate: $\int \cos^{-1} x dx$

A. $x\cos^{-1}x-\sqrt{1-x^2}+C$

B. $x\cos^{-1}x+\sqrt{1-x^2}+C$

C. $x\sin^{-1}x-\sqrt{1-x^2}+C$

D. none of these

Answer: A

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29. $\int\tan^{-1}xdx$

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

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

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

D. none of these

Answer: B

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30. $\int \sec^{-1}x\,dx$

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. none of these

Answer: B

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31. $\int \sin^{-1}(3x - 4x^3)\,dx = ?$

A. $3\left[x \sin^{-1} x + \sqrt{1 - x^2}\right] + C$

B. $3\left[x \sin^{-1} x - \sqrt{1 - x^2}\right] + C$

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

D. none of these

Answer: A

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

A. $2x\tan^{-1}x + \log|1+x^2| + C$

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

C. $2x\sin^{-1}x + \log|1+x^2| + C$

D. none of these

Answer: B

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33. $\int \tan^{-1}\sqrt{\frac{1-x}{1+x}}dx =$

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

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

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

D. none of these

Answer: C

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34. Evaluate: $\int \tan^{-1}\left(\frac{3x - x^3}{1 - 3x^2}\right) dx$

A. $3x \tan^{-1} x + \frac{3}{2}\log(1 + x^2) + C$

B. $3x \tan^{-1} x - \frac{3}{2}\log(1 + x^2) + C$

C. $3x \cos^{-1} x - \frac{3}{2}\sqrt{1 + x^2} + C$

D. $3x \sin^{-1} x + \frac{3}{2}\sqrt{1 + x^2} + C$

Answer: B

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35. $\int x^2 \cos x dx = ?$

A. $x^2 \sin x + 2x \cos x - 2 \sin x + C$

B. $2x \cos x - x \sin x + 2 \sin x + C$

C. $x^2 \sin x - 2x \sin x + 2 \sin x + C$

D. none of these

Answer: A

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36. $\int \sin x \log(\cos x) dx = ?$

A. $\cos x \log(\cos x) - \cos x + C$

B. $-\cos x \log(\cos x) + \cos x + C$

C. $\cos x \log(\cos x) + \cos x + C$

D. none of these

Answer: B

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37. $\int x \sin x \cos x dx = ?$

A. $-\frac{1}{4}x \cos 2x + \frac{1}{8}\sin 2x + C$

B. $\frac{1}{4}x\cos 2x + \frac{1}{8}\sin 2x + C$

C. $\frac{1}{4}x\cos 2x - \frac{1}{8}\sin 2x + C$

D. none of these

Answer: A

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38. $\int x^3 \cos x^2 dx = ?$

A. $x^2 \sin x^2 + \cos x^2 + C$

B. $\frac{1}{2}x^2 \sin x^2 + \frac{1}{2}\cos x^2 + C$

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

D. none of these

Answer: B

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

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

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

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

D. none of these

Answer: C

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40. $\int x.\tan^{-1}x dx$

A. $\frac{1}{2}(x^2+1)\tan^{-1}x - \frac{1}{2}x + C$

B. $\frac{1}{2}(x^2-1)\tan^{-1}x - \frac{1}{2}x + C$

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

D. none of these

Answer: A

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41. Evaluate $\int \sin(\log x)dx.$

A. $\frac{1}{2}x\sin\log x + \frac{1}{2}x\cos(\log x) + C$

B. $\frac{1}{2}x\sin\log x - \frac{1}{2}x\cos(\log x) + C$

C. $-\frac{1}{2}x\sin(\log x) + \frac{1}{2}x\cos(\log x) + C$

D. none of these

Answer: B

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42. Evaluate: $\int \left(\sin^{-1} x\right)^2 dx$

A. $\dfrac{2\sin^{-1} x}{\sqrt{1-x^2}} + C$

B. $\dfrac{1}{3}\left(\sin^{-1} x\right)^3 + \dfrac{1}{\sqrt{1-x^2}} + C$

C.

$$x\left(\sin^{-1} x\right)^2 + \left(\sin^{-1} x\right)\sqrt{1-x^2} + 2x + C$$

D.

$$x\left(\sin^{-1} x\right)^2\left(\sin^{-1} x\right)\sqrt{1-x^2} - 2x + C$$

Answer: D

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43. $\int e^x \left\{ \frac{1}{x} - \frac{1}{x^2} \right\} dx = ?$

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

B. $xe^x - e^x + C$

C. $e^x \cdot \frac{1}{x} + C$

D. none of these

Answer: C

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44. $\int e^x \left(\frac{1}{x^2} - \frac{2}{x^3} \right) dx = ?$

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

B. $\frac{e^x}{x^2} + C$

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

D. none of these

Answer: B

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45. $\int e^x \left\{ \sin^{-1} x + \frac{1}{\sqrt{1-x^2}} \right\} dx = ?$

A. $e^x \cdot \frac{1}{\sqrt{1-x^2}} + C$

B. $e^x \sin^{-1} x + C$

C. $\frac{-e^x}{\sin^{-1} x} + C$

D. none of these

Answer: B

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46. $\int e^x(\tan x + \log \sec x)dx = ?$

A. $e^x \log \sec x + C$

B. $e^x \tan x + C$

C. $e^x(\log \cos x) + C$

D. none of these

Answer: A

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47. $\int e^x(\cot x + \log \sin x)dx = ?$

A. $e^x \cot x + C$

B. $e^x \log \sin x + C$

C. $e^x \sin x + C$

D. none of these

Answer: B

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48. $\int e^x [\sec x + \log(\sec x + \tan x)] dx = ?$

A. $e^x \log(\sec x + \tan x) + C$

B. $e^x \sec x + C$

C. $e^x \log \tan x + C$

D. none of these

Answer: A

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

A. $e^x \cdot \frac{1}{(1+x^2)} + C$

B. $e^x \tan^{-1} x + C$

C. $-e^x \cot^{-1} x + C$

D. none of these

Answer: B

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50. $\int e^x (\tan x - \log \cos x) dx$

A. $e^x \tan x + C$

B. $e^x \log \cos x + C$

C. $e^x \log \sec x + C$

D. none of these

Answer: C

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51. $\int e^x \left(\cot x - \text{cosec}^2 x\right) dx = ?$

A. $-e^x \text{cosec}^2 x + C$

B. $e^x \cot x + C$

C. $-e^x \cot x + C$

D. none of these

Answer: B

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52. $\int e^x(\sin x + \cos x)dx = ?$

A. $e^x \sin x + C$

B. $e^x \cos x + C$

C. $e^x \tan x + C$

D. none of these

Answer: A

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53. $\int e^x \sec x(1+\tan x)dx = ?$

A. $e^x(1+\tan x)+C$

B. $e^x \sec x + C$

C. $e^x \tan x + C$

D. none of these

Answer: B

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54. $\int e^x \left(\frac{1 + x \log x}{x} \right) dx = ?$

A. $e^x \cdot \frac{1}{x} + C$

B. $e^x \log x + C$

C. $x e^x \log x + C$

D. none of these

Answer: B

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55. $\int e^x \cdot \frac{x}{(1+x)^2} dx = ?$

A. $e^x \cdot \frac{1}{(1+x)} + C$

B. $e^x \cdot \frac{1}{x} + C$

C. $e^x \cdot \frac{x}{(1+x)} + C$

D. none of these

Answer: A

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56. $\int e^x \left(\frac{1+\sin x}{1+\cos x} \right) dx = ?$

A. $e^x \sin \frac{x}{2} + C$

B. $e^x \cos \frac{x}{2} + C$

C. $e^x \tan \frac{x}{2} + C$

D. none of these

Answer: C

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