MATHS

BOOKS - MODERN PUBLICATION MATHS (KANNADA ENGLISH)

INDEFINITE INTEGERALS

Mcqs Multiple Choice Questions Level I

1. $\int 2e^x(\cos x - \sin x)dx$ is equal to :

A. $2e^x \cos x + c$

B. $2e^x \sin x + c$

C. $-2e^x \cos x + c$

D. $-2e^x \sin x + c$

Answer: A

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2. $\int \frac{4}{\sin^2 x \cos^2 x} dx$ is equal to :

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3. Evaluate the following integrals:

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

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4. Evaluate the following integrals:

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

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5. Evaluate the following integrals.

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

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6. Evaluate the following integrals.

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

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7. Evaluate the following integrals. $\int \frac{\sin x + \cos x}{\sqrt{1 + \sin 2x}} dx$

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8. $\int \frac{x^3}{x+1} dx$ is equal to:

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

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

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

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

Answer: D

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

A. $\log|1+\cos x|+c$

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

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

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

Answer: D

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10. $\int\frac{x^3}{\sqrt{1+x^2}}dx=a\left(1+x^2\right)^{3/2}+b\sqrt{1+x^2}+c$,then :

A. $a=\frac{1}{3},b=1$

B. $a=-\frac{1}{3},b=1$

C. $a=-\frac{1}{3},b=-1$

D. $a=\frac{1}{3},b=-1$

Answer: D

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11. $\int 2x^x(1+\log x)dx$ equals :

A. $2x^x + c$

B. $2x^x \log x + c$

C. $2e^{x^x} + c$

D. None of these.

Answer: A

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12. $\int \frac{dx}{x^{1/5}\left(1+x^{4/5}\right)^{1/2}}$ equals :

A. $\sqrt{1+x^{4/5}}+c$

B. $x^{\frac{4}{5}}\left(1+^{4/5}\right)^{1/2}+c$

C. $\frac{5}{2}\sqrt{1+x^{4/5}}+c$

D. None of these.

Answer: C

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13. If $\int \frac{1}{x\sqrt{1-x^3}}dx = a\log\left|\frac{\sqrt{1-x^3}-1}{\sqrt{1-x^3}+1}\right| + b, thenaisequal$ $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) $-\frac{1}{3}$ (d0 $-\frac{2}{3}$

A. $-\frac{2}{3}$

B. $-\frac{1}{3}$

C. $\frac{1}{3}$

D. $\frac{2}{3}$

Answer: C

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14. $\int \frac{\sin x - \cos x}{\sqrt{-\sin 2x}} e^{\sin x} \cos x dx$ is equal to

A. $e^{\sin x} + c$

B. $e^{\sin x + \cos x} + c$

C. $e^{\sin x - \cos x} + c$

D. None of these.

Answer: A

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15. $\int 7^{7^{7^x}} . 7^{7^x} . 7^x dx$ equals :

A. $\frac{7^{7^x}}{(\log 7)^3} + c$

B. $7^{7^{7^x}} (\log 7)^3 + c$

C. $\frac{7^{7^{7^x}}}{(\log 7)^3} + c$

D. None of these.

Answer: C

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16. If $l^r(x)$ means log log log ....x (log being repeated r times) , then $\int [xl(x)l^2(x)l^3(x) \ldots . l^r(x)]^{-1} dx$ equals :

A. $l^r(x) + c$

B. $l^{r+1}(x) + c$

C. $\frac{l^{r+1}(x)}{r+1} + c$

D. None of these.

Answer: B

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17. Evaluate the following Integral:

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

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18. If $\int \frac{1}{4-3\cos^2 x+5\sin^2 x}dx = \frac{1}{3}\tan^{-1}(f(x))+c$,then f(x)equals :

A. $2\tan x$

B. $3\tan x$

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

D. None of these.

Answer: B

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19. If $\int \frac{\sin x}{\sin^2 x+4\cos^2 x}dx = -\frac{1}{\sqrt{3}}\tan^{-1}\left(\frac{\sqrt{3}}{f(x)}\right)+c$,then f(x) equals :

A. $\sin x$

B. $\cos x$

C. $\tan x$

D. $\sec x$.

Answer: B

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20. $\int \frac{\cos 4x - 1}{\cot x - \tan x} dx$ equals :

A. $-\frac{1}{4}\cos 4x + c$

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

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

D. None of these.

Answer: D

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21. $\int \frac{\sin x}{\sin 4x} dx$

A. $\frac{1}{8}\log\left|\frac{\cos x - 1}{\cos x + 1}\right| - \frac{1}{2\sqrt{2}}\log\left|\frac{\sqrt{2}\cos x - 1}{\sqrt{2}\cos x + 1}\right| + c$

B. $\frac{1}{8}\log\left|\frac{\sin x - 1}{\sin x + 1}\right| - \frac{1}{4\sqrt{2}}\log\left|\frac{\sqrt{2}\sin x - 1}{\sqrt{2}\sin x + 1}\right| + c$

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

D. None of these.

Answer: B

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22. If $\int \frac{1}{(e^x - 1)^2} dx = f(x) - \log|g(x)| + c$, then :

A. $D_f = R$

B. $D_f = R - \{0\}$

C. $f(x) = 1 - e^{-x}$

D. $g(x) = 1 - e^{x}$.

Answer: B

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23. $\int \frac{\sin^8 x - \cos^8 x}{1 - 2\sin^2 x \cos^2 x} dx =$

A. $\sin 2x + c$

B. $-\sin 2x + c$

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

D. $-\frac{1}{2}\cos 4x + c$.

Answer: C

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24. If $\int x^6 \sin(5x^7)\,dx = \frac{k}{5}\cos(5x^7),\ x \neq 0$, then :

A. $k = 7$

B. $k = -7$

C. $k = \frac{1}{7}$

D. $k = \frac{-1}{7}$

Answer: D

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25. $\int \frac{\sin 2x}{2\cos^2 x + 3\sin^2 x}dx$ equals

A. $\log(2 + \sin x) + C$

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

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

D. $\log(2+\cos x)+C$

Answer: C

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

A. $\tan(xe^x)$

B. $\sqrt{\tan(xe^x)}$

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

D. None of these.

Answer: A

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27. $\int \frac{\cos 4x - 1}{\cot x - \tan x} dx$ is equal to

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

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

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

D. None of these.

Answer: D

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28. If $\int \frac{1}{f(x)} dx = \log[f(x)]^2 + c$, then f(x) is equal to:

A. $2x + \alpha$

B. $\frac{x}{2} + \alpha$

C. $x + \alpha$

D. $x^2 + \alpha.$

Answer: B

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29. Evaluate: $\int \frac{\cot x}{\sqrt{\sin x}} dx$

A. $\frac{-2}{\sqrt{\sin x}}$

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

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

D. $\frac{1}{2\sqrt{\sin x}} + c$

Answer: A

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30. Evaluate: $\int \frac{dx}{9+16\sin^2 x}$

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

B. $\frac{1}{5}\tan^{-1}\left(\frac{\tan x}{15}\right)$

C. $\frac{1}{15}\tan^{-1}\left(\frac{\tan x}{5}\right)$

D. $\frac{1}{15}\tan^{-1}\left(\frac{5\tan x}{3}\right)$

Answer: D

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31. $\int \frac{a^{\sqrt{x}}}{2\sqrt{x}}dx$ is :

A. $a^{\sqrt{x}}\log_e a$

B. $a^{\sqrt{x}} \log_a e$

C. $a^{\sqrt{x}} \log_{10} a$

D. $a^{\sqrt{x}} \log_a 10$

Answer: B

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32. $\int \frac{\sin 2x}{1+\sin^2 x} dx$ is :

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

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

C. $\log_e \left(1+\sin^2 x\right) + c$

D. $\log_e \left(\sin^2 x + x\right) + c$

Answer: C

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33. $\int \frac{dx}{\sqrt{2ax - x^2}}$ is :

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

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

C. $\cos^{-1}\left(\frac{x-a}{a}\right)$

D. $\frac{1}{a}\tan^{-1}\left(\frac{x-a}{a}\right)$.

Answer: A

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34. $\int \frac{dx}{1+3\sin^2 x} dx$ is :

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

B. $\frac{1}{2}\tan^{-1}(2\tan x)$

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

D. None of these.

Answer: B

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35. $\int x \log x dx$ is :

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

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

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

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

Answer: D

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36. $\int \frac{\sin x + \cos x}{\sqrt{1 + \sin 2x}} dx$ will be given by :

A. $\log(\sin x + \cos x) + c$

B. $x + c$

C. $\log x + c$

D. $\log \sin(\cos x) + c.$

Answer: B

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37. $\int \log x dx$ is equal to :

A. $x \log\left(\frac{e}{x}\right)$

B. $x \log\left(\frac{x}{e}\right)$

C. $x \log x$

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

Answer: B

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38. $\int x^3 e^{x^2} dx$ is equal to :

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

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

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

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

Answer: A

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39. $\int \frac{dx}{x^2+x+1} dx$ is :

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

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

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

D. None of these.

Answer: B

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40. $\int (x-1)e^{-x}$ dx is equal to :

A. $xe^{-x} + c$

B. $-xe^{-x}+c$

C. $xe^{x}+c$

D. $-xe^{x}+c.$

Answer: B

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41. $\int(1-\cot x)\cos ec^{2}x$ dx equals :

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

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

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

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

Answer: A

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42. $\int \frac{\sqrt{x}}{1+x} dx$ equals :

A. $\log\left(\frac{1+\sqrt{x}}{\sqrt{x}}\right) + c$

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

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

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

Answer: C

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43. If $f(x)\cos x dx = \frac{1}{2} f^2(x) + c$, then f(x) is :

A. x

B. $\sin x$

C. $\cos x$

D. 1

Answer: B

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44. $\int \frac{(x - x^3)^{1/3}}{x^4} dx$ is :

A. $\frac{1}{8}\left(1 - \frac{1}{x^2}\right)^{4/3} + 1 + c$

B. $\frac{3}{8}\left(\frac{1}{x^2} - 1\right)^{4/3} + c$

C. $\frac{-3}{8}\left(\frac{1}{x^2} - 1\right)^{4/3} + c$

D. None of these.

Answer: C

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45. $\int e^{3\log x}\left(x^4+1\right)^{-1}dx$ is equal to :

A. $\log\left(x^4+1\right)+c$

B. $\log\left(x^4+1\right)+c$

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

D. None of these.

Answer: C

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46. Find $\int\frac{\left(x^4-1\right)^{\frac{1}{4}}}{x^5}dx.$

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

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

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

D. None of these.

Answer: B

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47. $\int \frac{dx}{x(x^n+1)}$ is equal to :

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

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

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

D. None of these.

Answer: A

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48. If $\int \frac{\sin x}{\sin(x-\alpha)} dx = Ax + B\log\sin(x-\alpha) + C$, then value of (A,B) is :

A. $(\sin\alpha, \cos\alpha)$

B. $(\cos\alpha, \sin\alpha)$

C. $(-\sin\alpha, \cos\alpha)$

D. $(-\cos\alpha, \sin\alpha)$.

Answer: B

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49. $\int \frac{dx}{\cos x - \sin x}$ is equal to :

A. $\frac{1}{\sqrt{2}} \log \left| \tan \left(\frac{x}{2} - \frac{\pi}{8} \right) \right| + c$

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

C. $\frac{1}{\sqrt{2}} \log \left| \tan \left(\frac{x}{2} - \frac{3\pi}{8} \right) \right| + c$

D. $\frac{1}{\sqrt{2}} \log \left| \tan \left(\frac{x}{2} + \frac{3\pi}{8} \right) \right| + c$

Answer: A

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50. $\int \frac{dx}{\cos x + \sqrt{3} \sin x}$ equals :

A. $\frac{1}{2} \log \tan \left(\frac{x}{2} - \frac{\pi}{12} \right) + C$

B. $\log \tan \left(\frac{x}{2} + \frac{\pi}{12} \right) + C$

C. $\log \tan\left(\frac{x}{2} - \frac{\pi}{12}\right) + C$

D. $\frac{1}{2}\log \tan\left(\frac{x}{2} + \frac{\pi}{12}\right) + C.$

Answer: D

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Mcqs Multiple Choice Questions Level Ii

1. $\int \frac{1}{x^2(x^4+1)^{3/4}} dx$ is equal to _____.

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

B. $(x^4+1)^{1/4} + c$

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

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

Answer: D

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2. Integral of $f(x) = \sqrt{1+x^2}$ w.r.t x^2 is :

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

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

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

D. None of these.

Answer: A

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3. Find the value of $\int \frac{d(x^2+1)}{\sqrt{(x^2+2)}}$.

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

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

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

D. None of these.

Answer: B

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4. Let $f(x)=\int \frac{x^2}{(1+x^2)\left(1+\sqrt{1+x^2}\right)}dx$ and $f(0)=0$

,Then f(1) is :

A. $\log\left(1+\sqrt{2}\right)$

B. $\log(1+\sqrt{2})+\frac{\pi}{4}$

C. $\log(1+\sqrt{2})-\frac{\pi}{4}$

D. None of these.

Answer: C

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

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

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

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

D. None of these.

Answer: B

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6. If $\int \frac{1}{(x^2+1)(x^2+4)} dx = a \tan^{-1}. x + b \tan^{-1}. \frac{x}{2} + c,$

then :

A. $a = -\frac{1}{3}$

B. $b = -\frac{1}{6}$

C. $a = \frac{1}{3}$

D. $b = \frac{2}{3}.$

Answer: B::C

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7. If $\int \sqrt{1+\sec x} dx = k \sin^{-1}(f(x)) + c,$ then:

A. $f(x) = \sqrt{2}\sin\left(\frac{x}{2}\right), k = 2$

B. $f(x) = \sqrt{2}\cos\left(\frac{x}{2}\right), k = 2$

C. $f(x) = \sqrt{2}\sin\left(\frac{x}{2}\right), k = \sqrt{2}$

D. $f(x) = \sqrt{2}\tan\left(\frac{x}{2}\right), k = 2.$

Answer: A

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8. If $f(x) = \frac{x+2}{2x+3}$, then $\int\sqrt{\frac{f(x)}{x^2}}dx$equals : $\frac{1}{\sqrt{2}}g\left(\frac{1+\sqrt{2f(x)}}{1-\sqrt{2f(x)}}\right) - \sqrt{\frac{2}{3}}h\left(\frac{\sqrt{3f(x)}+\sqrt{2}}{\sqrt{3f(x)}-\sqrt{2}}\right) + c,$ where :

A. $g(x) = \log|x|, h(x) = \tan^{-1}x$

B. $g(x) = h(x) = \tan^{-1}$

C. $g(x) = \tan^{-1} x, h(x) = \log|x|$

D. $g(x) = \log|x|, h(x) = \log|x|.$

Answer: D

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9. $\int \sin^{-3/2} x \sin^{-1/2}(x+\alpha)dx = -2\cos ec\alpha\sqrt{f(x)} + c,$

then :

A. $f(x) = \tan(x+\alpha)$

B. $f(x) = \dfrac{\sin x}{\sin(x+\alpha)}$

C. $f(x) = \dfrac{\sin(x+\alpha)}{\sin x}$

D. $f(x) = \dfrac{\tan(x+\alpha)}{\tan x}.$

Answer: C

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10. If $\int \frac{\sqrt{1+3\sqrt{x}}}{x^{2/3}} dx = 2f(x)^{3/2} + c$, then f(x)equals :

A. $1 - x^{1/3}$

B. $1 + x^{1/3}$

C. $1 + x^{2/3}$

D. $1 - x^{2/3}$.

Answer: B

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

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

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

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

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

Answer: B

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12. $\int\left(\sqrt{\tan x} + \sqrt{\cot x}\right)dx$ is equal to

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

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

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

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

Answer: B

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13. $\int \frac{2^x}{\sqrt{1-4^x}} dx = k \sin^{-1} 2^x + c$, then k =

A. $\log 2$

B. $\frac{1}{2}$

C. $\frac{1}{2} \log 2$

D. $\frac{1}{\log 2}$.

Answer: D

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14. $\int x^2 e^{x^3} dx$ is equal to :

A. $e^x \sin\left(e^{x^3}\right)$

B. $\frac{1}{3}\sin\left(e^{x^3}\right)$

C. $\sin\left(e^{x^3}\right)$

D. $3\sin\left(e^{x^3}\right)$.

Answer: B

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15. $\int e^{e^{e^x}} e^{e^x} dx$ is equal to :

A. $\frac{1}{2}e^{e^{e^x}}$

B. $e^{e^{e^x}}$

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

D. $\left(e^{e^{e^x}}\right)^2$

Answer: B

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

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

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

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

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

Answer: C

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17. The value of $\sqrt{2} \int \frac{\sin x}{\sin\left(x - \frac{\pi}{4}\right)} dx$ is :

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

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

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

D. $x + \log\left|\sin\left(x - \frac{\pi}{4}\right)\right| + c$

Answer: D

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18. $\int \frac{(x^2 - 1)x}{x^4\sqrt{2x^4 - 2x^2 + 1}} dx$ is equal to :

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

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

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

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

Answer: D

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19. Let $f(x) = \frac{x}{(1+x^n)^{\frac{1}{n}}}$ for $n \geq 2$ and $g(x) = (\text{fofo}.\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{of})\frac{x}{\text{f occurs n times}}$.

Then $x^{n-2}g(x)dx$ equals .

A. $\frac{1}{n(n-1)}(1+nx^n)^{1-\frac{1}{n}} + k$

B. $\frac{1}{n-1}(1+nx^n)^{1-\frac{1}{n}} + k$

C. $\frac{1}{n(n+1)}(1+nx^n)^{1+\frac{1}{n}} + k$

D. $\frac{1}{n+1}(1+nx^n)^{1+\frac{1}{n}} + k.$

Answer: A

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20. Let $I = \int \frac{e^x}{e^{4x} + e^{2x} + 1} dx, J = \int \frac{e^{-x}}{e^{-4x} + e^{-2x} + 1} dx.$

Then , for an arbitrary constant c, the value of J-1 euqals :

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

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

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

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

Answer: C

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Latest Questions From Aieee Jee Examinations

1. If the integral $\int \frac{5\tan x}{\tan x - 2} dx = x + al_n|\sin x - 2\cos x| + k,$ then a is equal to :

A. -1

B. -2

C. 1

D. $2.$

Answer: D

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2. The integral $\int \frac{\sec^2 x}{(\sec x + \tan x)^{9/2}} dx$ equals : (for some arbitrary constant k)

A. $-\frac{1}{(\sec x + \tan x)^{\frac{11}{2}}} \left\{ \frac{1}{11} - \frac{1}{7}(\sec x + \tan x)^2 \right\} + k$

B. $\frac{1}{(\sec x+\tan x)^{11/2}}\left\{\frac{1}{11}-\frac{1}{7}(\sec x+\tan x)^2\right\}+k$

C. $-\frac{1}{(\sec x+\tan x)^{11/2}}\left\{\frac{1}{11}-\frac{1}{7}(\sec x+\tan x)^2\right\}+k.$

D. $-\frac{1}{(\sec x+\tan x)^{11/2}}\left\{\frac{1}{11}+\frac{1}{7}(\sec x+\tan x)^2\right\}+k.$

Answer: D

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3. Evaluate : $\int\left\{\frac{\sin^n x}{\cos^{n+6} x}\right\}^{\frac{1}{3}} dx.$

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4. The integral $\int\left(1+x-\frac{1}{x}\right)e^{x+\frac{1}{x}}dx$ is equal to :

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

B. $(x+1)e^{x+\frac{1}{x}}+c$

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

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

Answer: A

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5. The integral $\int \frac{dx}{x^2(x^4+1)^{3/4}}$ equal

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

B. $(x^4+1)^{1/4}+c$

C. $-(x^4+1)^{1/4}+c$

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

Answer: D

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Rcqs Recent Competitive Questions Questions From Karnataka Cet Comed

1. If $\int f(x)\sin x\cos x dx = \frac{1}{2(b^2-a^2)}\cdot(\log f(x))+C,$ where C is a costant of integration, then f(x)=

A. $\frac{2}{(b^2-a^2)\sin 2x}$

B. $\frac{2}{ab\sin 2x}$

C. $\frac{2}{(b^2-a^2)\cos 2x}$

D. $\frac{1}{\left(b^2\cos^2 x+\sin^2 xa^2\right)}$

Answer: D

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

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

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

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

D. None of these.

Answer: C

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3. $\int \frac{\cos^{n-1} x}{\sin^{n+1} x} dx, n \neq 0$ is :

A. $\frac{\cot^n x}{n} + C$

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

C. $-\frac{\cot^n x}{n} - C$

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

Answer: C

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4. If linear function $f(x)$ and $g(x)$ satisfy $\int[(3x-1)\cos x + (1-2x)\sin x]dx = f(x)\cos x + g(x)\sin x + C$, then

A. $f(x) = 3x - 5$

B. $g(x) = 3 + x$

C. $f(x) = 3(x-1)$

D. $g(x) = 3(x-1).$

Answer: D

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5. $\int \frac{\sin 2x}{\sin^2 x + 2\cos^2 x} dx$ (i) $-\log(1+\sin^2 x) + C$ (ii) $\log(1+\cos^2 x) + C$ (iii) $-\log(1+\cos^2 x) + C$ (iv) $\log(1+\tan^2 x) + C$

A. $\log(1+\cos^2 x) + C$

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

C. $-\log(1+\sin^2 x) + C$

D. $-\log(1+\cos^2 x) + C.$

Answer: D

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6. $\int e^x \frac{1+\sin x \cos x}{\cos^2 x} dx$ is equal to

A. $e^x \cos x + C$

B. $e^x \sec x \tan x + C$

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

D. $e^x \cos^2 - 1 + C.$

Answer: C

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

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

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

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

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

Answer: D

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8. $\int\frac{1}{x^2(x^4+1)^{3/4}}dx$ is equal to

A. $\frac{-(1+x^4)^{1/4}}{x}+C$

B. $\frac{-(1+x^4)^{1/4}}{x}+C$

C. $-(1+x^4)^{1/4}\frac{)}{2x}+C$

D. $\frac{-(1+x^4)^{3/4}}{x}+C.$

Answer: A

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9. $\int \frac{\sin^2 x}{1+\cos x}$ dx is equal to

A. $x + \sin x + C$

B. $x - \sin x + C$

C. $\sin x + C$

D. $\cos x + C.$

Answer: B

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

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

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

C. $e^x + C$

D. $e^x \sin x + C.$

Answer: A

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11. $\int \frac{x^3 - 1}{x^3 + x} dx =$

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

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

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

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

Answer: B

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12. In the integral

$\int \frac{\cos 8x + 1}{\cot 2x - \tan 2x} dx = A \cos 8x + k$, where k is an arbitrary constant,then A is equal to

A. $-\frac{1}{16}$

B. $\frac{1}{8}$

C. $\frac{1}{16}$

D. $-\frac{1}{8}$

Answer: C

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