MATHS

BOOKS - CENGAGE MATHS (HINGLISH)

INTEGRALS

Solved Examples And Exercises

1. If $\int \frac{dx}{x^2+ax+1} = f(x(x)) + c$, then $f(x)$ is inverse trigonometric function for $|a| > 2$ $f(x)$ is logarithmic function for $|a| < 2$ $g(x)$ is quadratic function for $|a| > 2$ $g(x)$ is rational function for $|a| < 2$

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2. If $f(x) = \int \frac{x^8+4}{x^4-2x^2+2} dx$ and $f(0) = 0, then$ (a)$f(x)$ is an odd function (b)$f(x)$ has range R (c)$f(x)$ has at least one real root (d)$f(x)$ is

a monotonic function.

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3. Statement 1: For `-1

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4. Each question has four choices, a,b,c and d, out of which only one is correct. Each question contains STATEMENT 1 and STATEMENT 2. If both the statements are TRUE and STATEMENT 2 is the correct explanation of STATEMENT 1. If both the statements are TRUE but STATEMENT 2 is NOT the correct explanation of STATEMENT 1. If STATEMENT 1 is TRUE and STATEMENT 2 is FALSE. If STATEMENT 1 is FALSE and STATEMENT 2 is TRUE. Statement 1: $\int e^x \sin x dx = \frac{e^x}{2}(\sin x - \cos x) + c$ Statement 2: $\int e^x \left(f(x) + f'(x)\right) dx = e^x f(x) + c$

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5. If $\int \frac{x^2 - x + 1}{(x^2 + 1)^{\frac{3}{2}}} e^x dx = e^x f(x) + c, then\ f(x)$ is an even function $f(x)$ is a bounded function the range of $f(x)$ is $(0, 1)$ $f(x)$ has two points of extrema

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6. $If \int \frac{x^4 + 1}{x^6 + 1} dx = \tan^{-1} f(x) - \frac{2}{3} \tan^{-1} g(x) + C, then$ both $f(x) and g(x)$ are odd functions $f(x)$ is monotonic function $f(x) = g(x)$ has no real roots $\int \frac{f(x)}{g(x)} dx = -\frac{1}{x} + \frac{3}{x^3} + c$

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7. If $\int \sin^{-1} x \cos^{-1} x dx = f^{-1}(x) \left[Ax - x f^{-1}(x) - 2\sqrt{1 - x^2}\right] + 2x + C, then$ $f(x) = \sin x$ (b) $f(x) = \cos x$ $A = \frac{\pi}{4}$ (d) $A = \frac{\pi}{2}$

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8. If $\int \frac{\cos 4x + 1}{\cot x - \tan x} dx = Af(x) + B, then$ (a)$A = -\frac{1}{8}$ (b) $B = \frac{1}{2}$ (c) $f(x)$ has fundamental period $\frac{\pi}{2}$ (d)$f(x)$ is an odd function

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9. Statement 1: $\int \frac{dx}{x^3\sqrt{1+x^4}} = -\frac{1}{2}\sqrt{1+\frac{1}{x^4}} + C$ Statement 2: For integration by parts, we have to follow ILATE rule

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10. Statement 1: $\int \frac{\sin x dx}{x}, (x > 0),$ cannot be evaluated. Statement 2: Only differentiable functions can be integrated.

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11. $\int \frac{4e^x + 6e^{-x}}{9e^x - 4e^{-x}} dx = Ax + B\log\left(9e^{2x} - 4\right) + C, then$ A=_____ _, B=_____, C=_____

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12. The value of the integral $\int \frac{\cos^3 x + \cos^5 x}{\sin^2 x + \sin^4 x} dx is$

$\sin x - 6\tan^{-1}(\sin x) + C$

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

$\sin x - 2(\sin x)^{-1} - 6\tan^{-1}(\sin x) + C$

$\sin x - 2(\sin x)^{-1} + 5\tan^{-1}(\sin x) + C$

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13. Evaluate: $\int \sin^{-1}\left(\frac{2x+2}{\sqrt{4x^2+8x+13}}\right) dx$

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14. Evaluate: for $m \in N$,

$\int \left(x^{3m} + x^{2n} + x^m\right)\left(2x^{2m} + 3x^m + 6\right)^{\frac{1}{m}} dx, x > 0$

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15. Evaluate: $\int \frac{\cos^4 x}{\sin^3 x \left(\sin^5 x + \cos^5 x\right)^{\frac{3}{5}}} dx$

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16. Evaluate: `intsqrt(1+cos e cx)dx ,(0

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17. $\int \frac{x^2 - 1}{x^3 \sqrt{2x^4 - 2x^2 + 1}} dx is equa < o \quad \frac{\sqrt{2x^4 - 2x^2 + 1}}{x^3} + C$ (b) $\frac{\sqrt{2x^4 - 2x^2 + 1}}{x} + C \quad \frac{\sqrt{2x^4 - 2x^2 + 1}}{x^2} + C$ (d) $\frac{\sqrt{2x^4 - 2x^2 + 1}}{2x^2} + C$

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18. The integral $\int \frac{\sec^2 x}{(\sec x + \tan x)^{\frac{9}{2}}} dx$ equals (for some arbitrary constant K). $-\frac{1}{(\sec x + \tan x)^{\frac{11}{2}}} \left\{ \frac{1}{11} - \frac{1}{7} (\sec x + \tan x)^2 \right\} + K$

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

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

$$\frac{1}{(\sec x+\tan x)^{\frac{11}{2}}}\left\{\frac{1}{11}+\frac{1}{7}(\sec x+\tan x)^2\right\}+K$$

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19. Evaluate: $\int\frac{dx}{x^3\sqrt{x^2-1}}$

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20. Evaluate : $\int\frac{2x}{(1-x^2)\sqrt{x^4-1}}dx$

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21. Evaluate: $\int\sqrt{\sec x-1}dx$

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22. Evaluate: $\int \sqrt{\frac{3-x}{3+x}} \sin^{-1}\left(\frac{1}{6}\sqrt{3-x}\right) dx$

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23. Evaluate: $\int \frac{(1-x\sin x)dx}{x(1-x^3 e^{3\cos x})}$

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24. Evaluate: If $\int \cos^n x dx \dot{p}rovethatI_n = \frac{1}{n}\left(\cos^{n-1} x \sin x\right) + \left(\frac{n-1}{x}\right) I_{n-2}$

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25. Evaluate: $\int \frac{x^2-1}{x\sqrt{(x^2+\alpha x+1)(x^2+\beta x+1)}} dx$

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26. Evaluate:

$$\int \frac{e^{\tan^{-1}x}}{(1+x^2)}\left[\left(\sec^{-1}\sqrt{1+x^2}+\cos^{-1}\left(\frac{1-x^2}{1+x^2}\right)\right]dx,\ (x>0).$$

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27. $\int \frac{\sqrt{x-1}}{x\sqrt{x+1}}dxisequa<o$ $\ln\left|x-\sqrt{x^2-1}\right|-\tan^{-1}x+c$

$\ln\left|x+\sqrt{x^2-1}\right|-\tan^{-1}x+c$ $\ln\left|x-\sqrt{x^2-1}\right|-\sec^{-1}x+c$

$\ln\left|x+\sqrt{x^2-1}\right|-\sec^{-1}x+c$

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28. $IfI=\int \frac{dx}{(2ax+x^2)^{\frac{3}{2}}}$,then I is equal to (a)$-\frac{x+a}{\sqrt{2ax+x^2}}+c$ (b) $-\frac{1}{a}\frac{x+a}{\sqrt{2ax+x^2}}+c$ (c)$-\frac{1}{a^2}\frac{x+a}{\sqrt{2ax+x^2}}+c$ (d) $-\frac{1}{a^3}\frac{x+a}{\sqrt{2ax+x^3}}+c$

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29. If $f'(x) = \frac{1}{-x + \sqrt{x^2+1}}$ and $f(0) = \frac{1+\sqrt{2}}{2}$ then $f(1)$ is equal to- (a) $\log\left(\sqrt{2}+1\right)$ (b) 1 (c)$1+\sqrt{2}$ (d) none of these

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30. $\int e^x \left(\frac{2\tan x}{1+\tan x} + \cot^2\left(x + \frac{\pi}{4}\right) \right) dx is equa < o$ $e^x \tan\left(\frac{\pi}{4} - x\right) + c\, e^x \tan\left(x - \frac{\pi}{4}\right) + c\, e^x \tan\left(\frac{3\pi}{4} - x\right) + c$ (d) none of these

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31. The value of the integral $\int \left(x^2 + x\right)\left(x^{-8} + 2x^{-9}\right)^{\frac{1}{10}} dx$ is

A. $\frac{5}{11}\left(x^2+2x\right)^{\frac{11}{10}} + c$

B. $\frac{5}{6}(x+1x)^{\frac{11}{10}} + c$

C. $\frac{6}{7}(x+1)^{\frac{11}{10}} + c$

D. none of these

Answer: null

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32.

$If \int \frac{dx}{(x+2)(x^2+1)} = a\ln(1+x^2) + b\tan^{-1}x + \frac{1}{5}\ln|x+2| + C$ Then $a = \frac{1}{10}, b = -\frac{2}{5}$ (b) $a = \frac{1}{10}, b = -\frac{2}{5}$ $a = -\frac{1}{10}, b = \frac{2}{5}$ (d) $a = \frac{1}{10}, b = \frac{2}{5}$

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33. $If \int \frac{3\sin x + 2\cos x}{3\cos x + 2\sin x} dx = ax + b\ln|2\sin x + 3\cos x| + C, then$ (a) $a = -\frac{12}{13}, b = \frac{15}{39}$ (b) $a = -\frac{7}{13}, b\frac{6}{13}$ (c)$a = \frac{12}{13}, b = \frac{15}{39}$ (d) $a = -\frac{7}{13}, b = -\frac{6}{13}$

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34. $If \int \frac{3e^x - 5e^{-1}}{4e^x + 5e^{-x}} dx = ax + b\ln\left(4e^x + 5e^{-x}\right) + C, then$ $a = -\frac{1}{8}, b = \frac{7}{8}$ (b) $a = \frac{1}{8}, b = \frac{7}{8}$ $a = -\frac{1}{8}, b = -\frac{7}{8}$ (d) $a = \frac{1}{8}, b = -\frac{7}{8}$

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35. $\int \sqrt{\frac{\cos x - \cos^3 x}{1 - \cos^3 x}} dx$ is equal to (a) $-\frac{2}{3}\sin^{-1}\left(\cos^{\frac{3}{2}} x\right) + C$ (b) $\frac{3}{2}\sin^{-1}\left(\cos^{\frac{3}{2}} x\right) + C$ (c) $\frac{2}{3}\cos^{-1}\left(\cos^{\frac{3}{2}} x\right) + C$ (d) none of these

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36. If $l'(x)$ means $\log\log\log x$, the log being repeated r times, then $\int \left[xl(x)l^2(x)l^3(x)l'(x)\right]^{-1} ds$ is equal to $l^{r+1}(x) + C$ (b) $\frac{l^{r+1}(x)}{r+1} + C$ $l^r(x) + C$ (d) none of these

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37. $\int \frac{\cos 4x - 1}{\cot x - \tan x} dx$ is equal to (A) $\frac{1}{2}\ln|\sec 2x| - \frac{1}{4}\cos^2 2x + c$ (B) $\frac{1}{2}\ln|\sec 2x| + \frac{1}{4}\cos^2 x + c$ (C) $\frac{1}{2}\ln|\cos 2x| - \frac{1}{4}\cos^2 2x + c$ (D) $\frac{1}{2}\ln|\cos 2x| + \frac{1}{4}\cos^2 x + c$

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38. If $\int \frac{dx}{\sqrt{\sin^3 x \cos^5 x}} = a\sqrt{\cot x} + b\sqrt{\tan^3} x + c,$ then (a) $a = -1, b = \frac{1}{3}$ (b) $a = -3, b = \frac{2}{3}$ (c)$a = -2, b = \frac{4}{3}$ (d) none of these

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39. $\int e^{\tan \hat{} ((-1)x)}(1 + x + x^2) d(\cot^{-1} x) isequa < o$ $-e^{\tan \hat{} ((-1)x)} + c$ (b) $e^{\tan \hat{} ((-1)x)} + c - xe^{\tan \hat{} ((-1)x)} + c$ (d) $xe^{\tan \hat{} ((-1)x)} + c$

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40. $\int \frac{x^9 dx}{(4x^2+1)^9} isequa < o$ (a) $\frac{1}{5x}\left(4+\frac{1}{x^2}\right)^{-5}+c$ (b) $\frac{1}{5}\left(4+\frac{1}{x^2}\right)^{-5}+c$ (c) $\frac{1}{10}\left(1+4x^2\right)^{-5}+c$ (d) $\frac{1}{10}\left(4+\frac{1}{x^2}\right)^{-5}+c$

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41. $\int \frac{2\sin x}{(3+\sin 2x)dxisequa < o}$

$\frac{1}{2}\ln\left|\frac{2+\sin x-\cos x}{2-\sin x+\cos x}\right|-\frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{\sin x+\cos x}{\sqrt{2}}\right)+c$

$\frac{1}{2}\ln\left|\frac{2+\sin x-\cos x}{2-\sin x+\cos x}\right|-\frac{1}{2\sqrt{2}}\tan^{-1}\left(\frac{\sin x+c0sx}{\sqrt{2}}\right)+c$

$\frac{1}{4}\ln\left|\frac{2+\sin x-\cos x}{2-\sin x+\cos x}\right|-\frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{\sin x+c0sx}{\sqrt{2}}\right)+c$

$noneofthese$

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42. $\int\left(\frac{\ln(\tan x)}{\sin x\cos x}dxi\right.$ se q u a lto (a) $\frac{1}{2}\ln(\tan x)+c$ (b) $\frac{1}{2}\ln\left(\tan^2 x\right)+c$ (c) $\frac{1}{2}(\ln(\tan x))^2+c$ (d) none of these

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43. $\int \sin^{-1}\left(\frac{2x}{1+x^2}\right)dx$ is e q u a lto

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44. If $\int \frac{1-x^7}{x(1+x^7)}dx = a\ln|x| + b\ln|x^7+1| + c$, then $a=1, b=\frac{2}{7}$ (b) $a=-1, b=\frac{2}{7}$ $a=1, b=-\frac{2}{7}$ (d) $a=-1, b=-\frac{2}{7}$

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45. if $\int \frac{dx}{x^2(x^n+1)^{\left(\frac{n-1}{n}\right)}} = -[f(x)]^{\frac{1}{n}} + c, then f(x) is$ (a)$(1+x^n)$ (b) $1+x^{-1}$ (c)$x^n + x^{-n}$ (d) none of these

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

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

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48. Evaluate: $\int \left(\sqrt{\frac{1+x^2}{x^2-x^4}} \right) dx$

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49. Evaluate: $\int \frac{x^2}{(a+bx)^2} dx$

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

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51. Evaluate: $\int \frac{x^2}{\sqrt{1-x}} dx$

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52. Evaluate: $\int \left(e^{\log x} + \sin x\right) \cos x dx$

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53. If

$f(x) = \sqrt{x}, g(x) = e^x - 1, and \int fog(x)dx = Afog(x) + B\tan^{-1}(fog(x)$

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54. If $\int \frac{2\cos x - \sin x + \lambda}{\cos x + \sin x - 2} dx = A\ln|\cos x + \sin x - 2| + Bx + C,$

then the value of $A + B + |\lambda|$ is_____

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55. If $\int\left[\left(\frac{x}{e}\right)^x+\left(\frac{e}{x}\right)^x\right]\ln x dx = A\left(\frac{x}{e}\right)^x + B\left(\frac{e}{x}\right)^x + C$ then the value of $A+B$ is____

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56. Evaluate: $\int \frac{\sin x}{\sin x - \cos x} dx$

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

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58. Evaluate: $\int \frac{dx}{x^2(x^4+1)^{\frac{3}{4}}}$

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59. $If \int x \log\left(1+\frac{1}{x}\right)dx = f(x)\log(x+1) + g(x)x^2 + Ax + C,$ then

(a) $f(x) = \frac{1}{2}x^2$ (b) $g(x) = \log x$ (c) $A = 1$ (d) none of these

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60. $If I = \int \frac{dx}{x^3\sqrt{x^2-1}}, then I equals$

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

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

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

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

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61. The value of $\int \frac{ax^2}{x\sqrt{c^2x^2-(ax^2+b)^2}}$ $\frac{1}{c}\sin^{-1}\left(ax+\frac{b}{x}\right)+k$

$c\sin^{-1}\left(a+\frac{b}{x}\right) + e\sin^{-1}\left(\frac{ax+\frac{b}{x}}{c}\right) + k$ (d) none of these

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62. $If \int \frac{dx}{\cos^3 x \sqrt{\sin 2x}} = a\left(\tan^2 x + b\right)\sqrt{\tan x} + c, then$ (a) $a = \frac{\sqrt{2}}{5}, b = \frac{1}{\sqrt{5}}$ (b)$a = \frac{\sqrt{2}}{5}, b = 5$ (c)$a = \frac{\sqrt{2}}{5}, b = -\frac{1}{\sqrt{5}}$ (d) $a = \frac{\sqrt{2}}{5}, b = \sqrt{5}$

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63. $4\int \frac{\sqrt{a^6 + x^8}}{x} dx is equa < o\ \sqrt{a^6 + x^8} + \frac{a^3}{2}\ln\left|\frac{\sqrt{a^6 + x^8} + a^3}{\sqrt{a^6 + x^8} - a^3}\right| + c$ $a^6 \ln\left|\frac{\sqrt{a^6 + x^8} - a^3}{\sqrt{a^6 + x^8} + a^3}\right| + c$ $\sqrt{a^6 + x^8} + \frac{a^3}{2}\ln\left|\frac{\sqrt{a^6 + x^8} - a^3}{\sqrt{a^6 + x^8} + a^3}\right| + c$ $\left|\frac{\sqrt{a^6 + x^8} + a^3}{\sqrt{a^6 + x^8} - a^3}\right| + c$

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64. If $I = \int e^{-x} \log(e^x + 1) dx$, then equal

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65. $If I_{m,n} = \int \cos^m x \sin nx dx, then 7I_{4,3} - 4I_{3,2}$ is equal to (a) constant (b) $-\cos^2 x + C$ (c) $-\cos^4 x \cos 3x + C$ (d) $\cos 7x - \cos 4x + C$

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66. if $\int \frac{dx}{x^2(x^n+1)^{\left(\frac{n-1}{n}\right)}} = -[f(x)]^{\frac{1}{n}} + c, then f(x) is$ (a)$(1+x^n)$ (b) $1+x^{-1}$ (c)$x^n + x^{-n}$ (d) none of these

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67. Evaluate: $\int \left(\sqrt{\tan x} + \sqrt{\cot x}\right) dx$

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68. Evaluate: $\int \frac{\sqrt{\cos 2x}}{\sin x} dx$

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69. $If \int xe^x \cos x dx = ae^x(b(1-x)\sin x + cx\cos x) + d, then$

$a = 1, b = 1, c = -1 \quad a = \frac{1}{2}, b = -, c = 1 \quad a = 1, b = -1, c = 1$

$a = \frac{1}{2}, b = 1, c = -1$

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70. If $I = \int \sqrt{\frac{5-x}{2+x}} dx$, then equal

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

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72. Evaluate: $\int \cos 2\theta \ln\left(\frac{\cos\theta + s\int h\eta}{\cos\theta - s\int h\eta}\right) dth\eta$

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73. Evaluate: $\int\left(\frac{1}{x3+x4}+\left(\frac{\ln(1+x6)}{x3+\sqrt{x}}\right)dx\right.$

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74. Evaluate: $\int(\sqrt{\tan x}+\sqrt{\cot x})\,dx$

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75. $IfI=\int\frac{dx}{(a^2-b^2x^2)^{\frac{3}{2}}},thenIequal$ (a) $\frac{x}{\sqrt{a^2-b^2x^2}}+C$ (b) $\frac{x}{2\sqrt{a^2-b^2x^2}}+C$ (c) $\frac{ax}{\sqrt{a^2-b^2x^2}}+C$ (d) none of these

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76. If $I=\int(\sqrt{\cot x}-\sqrt{\tan x})\,dx,thenIequal$

$\sqrt{2}\log(\sqrt{\tan x}-\sqrt{\cot x})+C$ $\sqrt{2}\log|\sin x|\cos x+\sqrt{\sin 2x}\mid+C$

$\sqrt{2}\log\left|s \in x - \cos x + \sqrt{2}s \in x\cos x\right| + C$

$\sqrt{2}\log\left|\sin\left(x + \frac{\pi}{4}\right) + \sqrt{2}\sin x\cos x\right| + C$

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77. $\int x\left(\left(\frac{\ln a^{\frac{x}{2}}}{3a^{\frac{5x}{2}}b^{3x}} + \frac{\ln b^{b}\ \hat{}\ x}{2a^{2x}b^{4x}}\right)dx\left(wherea, b \in R^{+}\right)isequa < o\right.$

$\frac{1}{6\ln a^2b^3}a^{2x}b^{3x}\frac{\ln\left(a^{2x}b^{3x}\right)}{e} + k \qquad \frac{1}{6\ln a^2b^3}\frac{1}{a^{2x}b^{3x}}\frac{\ln 1}{ea^{2x}b^{3x}} + k$

$\frac{1}{6\ln a^2b^3}\frac{1}{a^{2x}b^{3x}}\ln\left(a^{2x}b^{3x}\right) + k - \frac{1}{6\ln a^2b^3}\frac{1}{a^{2x}b^{3x}}\ln\left(a^{2x}b^{3x}\right) + k$

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78. $\int e^{x}\ \hat{}\ 4\left(x + x^3 + 2x^5\right)e^{x}\ \hat{}\ 2dxisequa < o\ \frac{1}{2}xe^{x}\ \hat{}\ 2e^{x}\ \hat{}\ 4 + c$ (b)

$\frac{1}{2}x^2e^{x}\ \hat{}\ 4 + c\ \frac{1}{2}e^{x}\ \hat{}\ 2e^{x}\ \hat{}\ 4 + c$ (d) $\frac{1}{2}x^2e^{x}\ \hat{}\ 2e^{x}\ \hat{}\ 4 + c$

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79. $\int \frac{\cos ec^2 x - 2005}{\cos^{2005} x} dx is equa < o \frac{\cot x}{(\cos x)^{2005}} + c$ (b) $\frac{\tan x}{(\cos x)^{2005}} + c$

$\left(- \frac{\tan x}{(\cos x)^{2005}} + c \right.$ (d) none of these

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80. If $\int \frac{\ln\left(x + \sqrt{1 + x^2}\right)}{\sqrt{1 + x^2}} dx = a\sqrt{1 + x^2} \ln\left(x + \sqrt{1 + x^2}\right) + bx + c$,

then (A) $a = 1, b = -1$ (B) $a = 1, b = 1$ (C) $a = -1, b = 1$ (D)

$a = -1, b = -1$

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81. If $f(x) \sin x \cos x dx = \frac{1}{2(b^2 - a^2)} \ln f(x) + c$,then f(x) is equal to (a)

$\frac{1}{a^2 \sin^2 x + b^2 \cos^2 x}$ (b) $\frac{1}{a^2 \sin^2 x - b^2 \cos^2 x}$ $\frac{1}{a^2 \cos^2 x + b^2 \cos^2 x}$ (d)

$\frac{1}{a^2 \cos^2 x - b^2 \cos^2 x}$

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82. $If x f(x) = 3f^2(x) + 2, then \int \frac{2x^2 - 12x f(x) + f(x)}{(6f(x) - x)(x^2 - f(x))^2} dx$ equal.

(A) $\frac{1}{x^2 - f(x)} + c$ (B) $\frac{1}{x^2 + f(x)} + c$ (C) $\frac{1}{x - f(x)} + c$ (D) $\frac{1}{x + f(x)} + c$

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83. $\int \frac{dx}{(1+\sqrt{x})\sqrt{(x - x^2)}} isequa < o$ (a) $\frac{1+\sqrt{x}}{(1-x)^2} + c$ (b) $\frac{1+\sqrt{x}}{(1+x)^2} + c$ (c) $\frac{1-\sqrt{x}}{(1-x)^2} + c$ (d) $\frac{2(\sqrt{x}-1)}{\sqrt{(1-x)}} + c$

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84. The value of integral $\int e^x \left(\frac{1}{\sqrt{1+x^2}} + \frac{1}{\sqrt{(1+x^2)^5}} \right) dx isequa < o$

$e^x \left(\frac{1}{\sqrt{1+x^2}} + \frac{1}{\sqrt{(1+x^2)^3}} \right) + c$

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

$e^x\left(\frac{1}{\sqrt{1+x^2}}+\frac{1}{\sqrt{(1+x^2)^5}}\right)+c$ none of these

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85. $\int\sqrt{1+\cos ec}dx$ equals

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86. If $l=\int\sec^2 x\cos ec^4 x dx=A\cot^3 x+B\tan x+C\cot x+D,$ then

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87. A curve $g(x)=\int x^{27}\left(1+x+x^2\right)^6\left(6x^2+5x+4\right)dx$ is passing through origin. Then $g(1)=\frac{3^7}{7}$ (b) $g(1)=\frac{2^7}{7}$ $g(-1)=\frac{1}{7}$ (d) $g(-1)=\frac{3^7}{14}$

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88. If $\int\sqrt{\cos ecx+1}dx=kfog(x)+c, wherek$ is a real constant, then

$k=-2, f(x)=\cot^{-1}x, g(x)=\sqrt{\cos ecx-1}$

$k=-2, f(x)=\tan^{-1}x, g(x)=\sqrt{\cos ecx-1}$

$k=2, f(x)=\tan^{-1}xg(x)=\frac{\cot x}{\sqrt{\cos ecx-1}}$

$k=2, f(x)=\cot^{-1}xg(x)=\frac{\cot x}{\sqrt{\cos ecx-1}}$

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

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

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

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

D. none of these

Answer: C

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90. $\int \frac{\sqrt{x^2+1}}{x^4} dx -$ (a) $-\frac{1}{3}\frac{(x^2+1)^{\frac{3}{2}}}{x^3} + C$ (b) $x^3(x^2+1)^{-\frac{1}{2}} + C$ (c) $\frac{\sqrt{x^2+1}}{x^2} + C$ (d) $-\frac{1}{3}\frac{(x^2+1)^{\frac{3}{2}}}{x^2} + C$

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91. $\int \frac{dx}{e^x\sqrt{2e^x-1}} =$ $2\sec^{-1}\sqrt{2e^x} + c$ $-2\frac{\tan^{-1}1}{\sqrt{2e-1}} + c$ $2\sec^{-1}(\sqrt{2}e^x) + c$ (d) $2\tan^{-1}\sqrt{2e^x-1} + c$

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92. If $\int \sin x d(\sec x) = f(x) - g(x) + c, then$ $f(x) = \sec x$ (b) $f(x) = \tan x$ $g(x) = 2x$ (d) $g(x) = x$

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93. If $I = \int \frac{\sin x + \sin^3 x}{\cos 2x} dx = P \cos x + Q \log|f(x)| + R$, then (a) $P = \frac{1}{2}, Q = -\frac{3}{4\sqrt{2}}$ (b) $P = \frac{1}{4}, Q = \frac{1}{\sqrt{2}}$ (c) $f(x) = \frac{\sqrt{2}\cos x + 1}{\sqrt{2}\cos x - 1}$ (d) $f(x) = \frac{\sqrt{2}\cos x - 1}{\sqrt{2}\cos x + 1}$

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94. If $\int \frac{e^{x-1}}{(x^2 - 5x + 4)} 2x dx = AF(x-1) + BF(x-4) + C and F(x) = \int \frac{e^x}{x} dx$

(a) $A = -\frac{2}{3}$ (b) $b = \left(\frac{4}{3}\right)e^3$ (c) $A = \frac{2}{3}$ (d) $d \in R$

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

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

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97. $\int \frac{3+2\cos x}{(2+3\cos x)^2} dx is equa < o \quad \left(\frac{\sin x}{3\cos x+2}\right)+c$ (b) $\left(\frac{2\cos x}{3\sin x+2}\right)+c \left(\frac{2\cos x}{3\cos x+2}\right)+c$ (d) $\left(\frac{2\sin x}{3\sin x+2}\right)+c$

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98. $\int \left(\frac{x+2}{x+4}\right)^2 + e^x dx is equa < o \quad e^x\left(\frac{x}{x+4}\right)+c$ (b) $e^x\left(\frac{x+2}{x+4}\right)+c\, e^x\left(\frac{x-2}{x+4}\right)+c$ (d) $\left(\frac{2xe^2}{x+4}\right)+c$

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99. $If I = \int \frac{\sin 2x}{(3+4\cos x)^3} dx, then Iequals$ (a) $\frac{3\cos x+8}{(3+4\cos x)^2}+C$ (b) $\frac{3+8\cos x}{16(3+4\cos x)^2}+C$ (c) $\frac{3\cos x}{(3+4\cos x)^2}+C$ (d) $\frac{3-8\cos x}{16(3+4\cos x)^2}+C$

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100. If $I = \int \frac{dx}{\sec x + \cos ecx}$, then equals

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101. $\int \frac{x^3 dx}{\sqrt{1+x^2}}$ is equal to (A) $\frac{1}{3}\sqrt{1+x^2}\left(2+x^2\right)+C$ (B) $\frac{1}{3}\sqrt{1+x^2}\left(x^2-1\right)+C$ (C) $\frac{1}{3}\left(1+x^2\right)^{\frac{3}{2}}+C$ (D) $\frac{1}{3}\sqrt{1+x^2}\left(x^2-2\right)+C$

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102. $\int e^{\tan x}(\sec x - \sin x)dx$ is equal to

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103. $\int \frac{\left(x^2+1\right)}{(x+1)^2} dx isequa < o \left(\frac{x-1}{x+1}\right)e^x + c$ (b) $e^x\left(\frac{x+1}{x-1}\right)+c$ $e^x(x+1)(x-1)+c$ (d) none of these

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104. $\int x \sin x \sec^3 x dx$i se q u a lto

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105. $\int \sqrt{e^x - 1} dx isequa < o \quad 2\left[\sqrt{e^x - 1} - \tan^{-1}\sqrt{e^x - 1}\right] + c$

$\sqrt{e^x - 1} - \tan^{-1}\sqrt{e^x - 1} + c \quad \sqrt{e^x - 1} + \tan^{-1}\sqrt{e^x - 1} + c$

$2\left[\sqrt{e^x - 1} - \tan^{-1}\sqrt{e^x - 1}\right] + c$

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106. $\int \frac{\ln\left(\frac{x-1}{x+1}\right)}{x^2 - 1} dx \quad is \quad equal \quad to \quad$ (a) $\frac{1}{2}\left(\ln\left(\frac{x-1}{x+1}\right)\right)^2 + C$ (b)

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

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

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107. Let $g(x) = \int \frac{1+2\cos x}{(\cos x+2)^2} dx and g(0) = 0.$ then the value of $8g\left(\frac{\pi}{2}\right)$ is _____

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108. Let $k(x) = \int \frac{(x^2+1)dx}{(x^3+3x+6)^{\frac{1}{3}}} and k(-1) = \frac{1}{2^{\frac{1}{3}}}$. Then the value of $k(-2)$ is____

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109. Column I a) $\int \frac{x^2-x+1}{x^3-4x^2+4x} dx$ b) $\int \frac{x^2-1}{x(x-2)^3} dx$ c) $\int \frac{x^3+1}{x(x-2)^2} dx$ d) $\int \frac{x^5+1}{x(x-2)^3} dx$ COLUMN II (which of the following functions appear in integration of functions in columnI) p) $\log|x|$ q) $\log|x-2|$ r.) $\frac{1}{(x-2)}$ s) x

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110. Let $f(x)=\int x^{\sin x}\left(1+x\cos x\ln x+\sin x\right)dx and f\left(\frac{\pi}{2}\right)=\frac{\pi^2}{4}$. Then the value of $|\cos(f(\pi))|$ is____

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111. Each question contains statements given in two columns which have to be matched. Statements (a,b,c,d) in column I have to be matched with statements (p,q,r,s) in column II. If the correct match are a-p, s, b-r c-p, q. and d-s, then the correctly bubbled $4x4$ matrix should be as follows: figure Column I, a) If $\int\frac{2^x}{\sqrt{1-4^x}}dx=k\sin^{-1}(f(x))+C$, then $k$is greater than, b) If $\int\frac{\left(\sqrt{x}\right)^5}{\left(\sqrt{x}\right)^7+x^6}dx=a\frac{\ln\left(x^k\right)}{x^k+1}+c$, then $ak$is less than, c) If $\int\frac{x^4+1}{x\left(x^2+1\right)^2}dx=k\ln|x|+\frac{m}{1+x^2}+n$, where $n$is the constant of integration, then $mk$is greater than, d) If $\int\frac{dx}{5+4\cos x}=k\tan^{-1}\left(xtan\frac{x}{2}\right)+C$, then $k/m$is greater than, COLUMN II p) 0 q) 1 r) 3 s)4

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112. Column I, a) $\int \frac{e^{2x}-1}{e^{2x}+1}dx$ is equal to b) $\int \frac{1}{(e^x+e^{-x})^2}dx$ is equal to c) $\int \frac{e^{-x}}{1+e^x}dx$ is equal to d) $\int \frac{1}{\sqrt{1-e^{2x}}}dx$ is equal to COLUMN II p) $x-\log\left[1+\sqrt{1-e^{2x}}\right]+c$ q) $\log(e^x+1)-x-e^{-x}+c$ r) $\log(e^{2x}+1)-x+c$ s) $-\frac{1}{2(e^{2x}+1)}+c$

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113. Statement 1: If the primitive of $f(x)=\pi\sin\pi x+2x-4$ has the value $-2f$ or $x=1$, then there are exactly two values of x for which primitive of $f(x)$ vanishes. Statement 2: $\cos\pi x$ has period 2.

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114. Statement 1: $\int \frac{\{f(x)\varphi'(x)-f'(x)\varphi(x)\}}{f(x)\varphi(x)}$ $-\log f(x)dx=\frac{1}{2}\left\{\frac{\varphi(x)}{f(x)}\right\}^2+c$ Statement 2 : $\int (h(x))^n h'(x)dx=\frac{(h(x))^{n+1}}{n+1}+c$

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

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116. If $\int x^2 \dot{e}^{-2x} dx = e^{-2x}(ax^2 + bx + c) + d$, then the value of $\left|\frac{a}{bc}\right|$ is_____

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117. If $f(x) = \int \frac{3x^2 + 1}{(x^2 - 1)^3} dx and f(0) = 0$, then the value of $\left|\frac{2}{f(2)}\right|$ is___

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118. Evaluate: $\int \sqrt{\frac{1 - \sqrt{x}}{1 + \sqrt{x}}}$

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119. If $\int x^5(1+x^3)^{\frac{2}{3}}dx = A(1+x^3)^{\frac{8}{3}} + B(1+x^3)^{\frac{5}{3}} + C, then$ (b) $A = \frac{1}{8}, B = -\frac{1}{}$A=-1/8,B=1/5$(d) no \neq of these$A=1/4,B=1/55

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120. The value of the integral $\int \frac{(1-\cos\theta)^{\frac{2}{7}}}{(1+\cos\theta)^{\frac{9}{7}}} dthmis \frac{7}{11}\left(tan\frac{\theta}{2}\right)^{\frac{11}{7}} + C$ (b) $\frac{7}{11}\left(\frac{\cos\theta}{2}\right)^{\frac{11}{7}} + C \frac{7}{11}\left(s\int h\frac{\eta}{2}\right)^{\frac{11}{7}} + C$ (d) none of these

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121. Let $f(x) = \int \frac{x^2 dx}{(1+x^2)\left(1+\sqrt{x^2+1}\right)} and f(0) = 0.$ Then value of $f(1)$ will be $\frac{7}{11}\left(tan\frac{\theta}{2}\right)^{\frac{11}{7}} + C$ (b) $\frac{7}{11}\left(\frac{\cos\theta}{2}\right)^{\frac{11}{7}} + C$ $\frac{7}{11}\left(s\int h\frac{\eta}{2}\right)^{\frac{11}{7}} + C$ (d)none of these

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122. If $y = \int \sqrt{x}\left(1 + x^{\frac{1}{3}}\right)^4 dx$ is equal to

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123. If $\int \sqrt{1 + \sin x} f(x) dx = \frac{2}{3}(1 + \sin x)^{\frac{3}{2}} + c, then f(x) equal \ \cos x$

(b) $\sin x$ (c) $\tan x$ (d) 1

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124. Let $\int e^x \{f(x) - f'(x)\} dx = \varphi(x)$. Then $\int e^x f(x) dx$ is $\varphi(x) =$

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125. $\int \left(\frac{\sin(2x)}{\sin^4 + \cos^4 x} dx is equal \rightarrow \right.$

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

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127. Evaluate : $\int \frac{x^2+20}{(x\sin x+5\cos x)^2}dx$

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128. $\int \frac{x+2}{(x^2+3x+3)\left(\sqrt{x+1}\right)}.\,dx$

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

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

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131. Evaluate: $\int \frac{1}{(x-3)\sqrt{x+1dx}}$

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132. Evaluate: $\int (x-5)\sqrt{x^2+xdx}$

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

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134. Evaluate: $\int \sec^3 x dx$

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135. Evaluate: $\int \frac{x^2 - 1}{(x^2 + 1)\sqrt{x^4 + 1}} dx$

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

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137. Evaluate: $\int \frac{1}{(x^2 - 4)\sqrt{x + 1}} dx$

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

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139. Evaluate: $\int \frac{x}{(x^2+4)\sqrt{x^2+1}}dx$

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

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141. Evaluate: $\int e^{\sin^{-1}x}dx$.

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

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

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

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145. Find $\int \frac{e^x(1+x)}{\cos^2(xe^2)}dx$

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146. Evaluate: $\int \frac{\sin^3 x dx}{(\cos^4 x + 3\cos^2 x + 1)\tan^{-1}(\sec x + \cos x)}$

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147. Evaluate: $\int \frac{e^{\sqrt{x}} \cos\left(e^{\sqrt{x}}\right)}{\sqrt{x}} dx$

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

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149. Evaluate: $\int \frac{1}{\sqrt{e^{5x}}(e^{2x} + e^{-2x})^3 4}$

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150. Find: $\int \sin^5 x dx$

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

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152. Evaluate: $\int \left(\left(\frac{e}{x} \right)^x + \left(\frac{x}{e} \right)^x \right) 1nx dx.$

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

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154. Evaluate: $\int \frac{x^2-1}{(x^4+3x^2+1)\tan^{-1}\left(x+\frac{1}{x}\right)}dx$

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155. Evaluate: $\int \frac{x^2-1}{(x^2+1)\sqrt{1+x^4}}$

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

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157. Evaluate: $\int \frac{x^2+4}{x^4+16}dx$

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158. Evaluate: $\int \sqrt{\tan\theta} dth\eta$

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159. Evaluate: $\int \frac{3\sin x + 2\cos x}{3\cos x + 2\sin x} dx$

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

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

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162. Evaluate: $\int \frac{1}{x^4+1} dx$

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163. Evaluate: $\int \frac{1}{\sin^4 x + \cos^4 x} dx$

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164. Evaluate: $\int [f(x)g^x - f^x g(x)] dx$

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

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166. Evaluate: $\int x^3 d\left(\tan^{-1} x\right)$

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167. Evaluate: $\int \sin^2(\log x)\,dx$

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168. Evaluate: $\int \left(\frac{\cos x}{x} - \log x^{\sin x}\right) dx.$

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169. Evaluate: $\int \frac{dx}{x^2(1+x^5)^{\frac{4}{5}}}$

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170. Evaluate: $\int \frac{1+x^4}{(1-x^4)^{\frac{3}{2}}} dx$

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171. Evaluate: $\int \frac{dx}{\sqrt[3]{\sin^{11} x \cos x}}$

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172. Evaluate: $\int \frac{\sin x}{2 + \sin 2x} dx$

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173. Evaluate $\int \frac{\log_e \left(x + \sqrt{x^2 + 1}\right)}{\sqrt{x^2 + 1}} dx.$

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

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175. Evaluate: $\int \frac{\left(x - x^3\right)^{\frac{1}{3}}}{x^4} dx$

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176. Evaluate: $\int \frac{1}{\left[(x-1)^3 (x+2)^5\right]^{\frac{1}{4}}} dx$

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

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178. Evaluate: Evaluate: $\int x^{-11} \left(1 + x^4\right)^{-\frac{1}{2}} dx$

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179. Evaluate: $\int \frac{2x - \sqrt{\sin^{-1} x}}{\sqrt{1 - x^2}} dx.$

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

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181. Evaluate: $\int \frac{\sin x}{\sin(x - a)} dx$

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182. Evaluate: $\int \frac{dx}{\cos x - \sin x}$

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183. Evaluate: $\int \sin(e^x) d(e^x)$

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184. Evaluate: $\int \tan^3 x dx$

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

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186. Evaluate: $\int \cos^3 x \sqrt{s \in} dx$

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

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188. Evaluate: $\int\left(2^{2^{2^x}}\left(2^{2^x}\right)\left(2^x\right)\right)dx$

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189. Evaluate: $\int\frac{e^x}{e^{2x}+6e^x+5}dx$

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190. The number of irrational roots of the equation $\frac{4x}{x^2+x+3}+\frac{5x}{x^2-5x+3}=-\frac{3}{2}$ is $a.\ 4\ b.\ 0$ c. 1 d. 2

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

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192. Evaluate: $\int \frac{4x+1}{x^2+3x+2}$

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193. Evaluate: $\int \frac{dx}{(a^2+x^2)^{\frac{3}{2}}}$

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194. Evaluate: $\int \frac{1}{x^2\sqrt{1+x^2}}dx$

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195. Evaluate: $\int \frac{\sec^2 x}{\sqrt{\tan^2 x+4}}dx$

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196. Evaluate: $\int \frac{1}{\sqrt{(x-1)(x-2)}} dx$

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197. Evaluate: $\int \sqrt{\frac{x}{a^3 - x^3}} dx$

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198. Evaluate: $\int \frac{x^2}{\sqrt{1-x^6}} dx$

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199. Evaluate: $\int \frac{\left[\sqrt{1+x^2}+x\right]^n}{\sqrt{1+x^2}} dx$

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200. Evaluate: $\int \frac{dx}{(x-p)\sqrt{(x-p)(x-q)}}$

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201. Evaluate: $\int \sec^5 x \cos ec^3 x dx$

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202. Evaluate: $\int \frac{dx}{\cos^3 x \sqrt{\sin 2x}}$

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

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

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205. Evaluate: $\int x^x 1n(ex)dx$

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

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

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

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209. Find $\int \frac{\sin^6 x}{\cos^8 x} dx$.

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210. Evaluate: $\int \sin 2x d(\tan x)$

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211. Evaluate: $\int \frac{1}{\sqrt{3}\sin x + \cos x} dx$

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212. Evaluate: $\int \frac{1}{\sin(x-a)\sin(x-b)} dx$

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213. Evaluate: $\int (1 + 2x + 3x^2 + 4x^3 +) dx, (< |x| < 1)$

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214. Evaluate: $\int \frac{1n(1nx)}{x1nx} dx, (x > 0)$

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215. Evaluate: $\int \frac{dx}{x + x \log x}$

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216. Evaluate: $\int \sec^p x \tan x dx$

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217. Evaluate: $\int \cos ec^4 x dx$

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218. Evaluate: $\int \frac{\cos x - \sin x}{\cos x + \sin x}(2 + 2\sin 2x)dx$

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219. Evaluate: $\int \tan^2 x \sin^2 x dx$

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220. Evaluate: $\int \frac{e^{3x} + e^{5x}}{e^x + e^{-x}}dx$

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221. Evaluate: $\int \frac{\cos 2x - \cos 2\theta}{\cos x - \cos \theta} dx$

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222. Evaluate: $\int \frac{(1 + 1nx)^5}{x} dx$

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223. Evaluate: $\int \sin x \cos x \cos 2x \cos 4x \cos 8x dx$

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224. Evaluate: $\int \frac{\sin 2x}{(a + b \cos x)^2}$

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225. Evaluate: $\frac{1}{\sqrt{1-e^{2x}}}dx$

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226. Evaluate: $\int \frac{2x+3}{\sqrt{x^2+4x+1}}dx$

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227. Evaluate: $\int \frac{dx}{\sqrt{x}+\sqrt{x-2}}$

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

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229. Evaluate: $\int x \sin 3x dx$.

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230. Evaluate: $\int x \log x dx$.

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231. Evaluate: $\int \sin^{-1} x dx$.

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232. Evaluate: $\int \frac{x - \sin x}{1 - \cos x} dx$

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233. Evaluate: $\int \sqrt{x^2 + 2x + 5} dx$

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234. Evaluate: $\int \sqrt{1+3x-x^2}dx$

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

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

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237. Evaluate: $\int \frac{\left(\sin^{-1} x\right)^3}{\sqrt{1-x^2}}dx$

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

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239. Evaluate: $\int\tan^4 x dx$

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240. Evaluate: $\int(\tan x - x)\tan^2 x dx$

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241. Evaluate: $\int\frac{\log\left(\frac{\tan x}{2}\right)}{\sin x}dx$

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242. Evaluate: $\int \frac{\sqrt{2+\log x}}{x} dx$

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

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

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

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

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247. Evaluate $\int f(x)$ is polynomaial function of then the degree, prove that $\int e^x f(x) dx = e^x \left[f(x) f'(x) + f^x = f^x + ... + (-1)^n f^n(x) \right]$ where $f^n(x) dx + \frac{d^n f}{dx^n}$

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248. Evaluate: $\int e^x \left(f(x) + f'(x) \right) dx = e^x f(x) + C$

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249. Evaluate: $\int \frac{dx}{x^2 (x^4+1)^{\frac{3}{4}}}$ (A) $-\left(1 + \frac{1}{x^4}\right)^{\frac{1}{4}} + c$ (B) $\left(1 + \frac{1}{x^4}\right)^{\frac{1}{4}} + c$ (C) $-\left(1 - \frac{1}{x^4}\right)^{\frac{1}{4}} + c$ (D) $-\left(1 + \frac{1}{x^4}\right)^{\frac{1}{4}} + c$

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250. Evaluate: $\int \frac{dx}{\sqrt{2ax - x^2}}$

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251. Evaluate: $\int \sin^{-1} \sqrt{\frac{x}{a+x}} dx.$

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252. Evaluate: $\int \frac{x^{\frac{5}{2}}}{\sqrt{1+x^7}} dx$

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253. Evaluate: $\int \frac{\sec^2 x}{3 + \tan x} dx$

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254. Evaluate: $\int \frac{x}{\sqrt{x+2}} dx$

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255. Evaluate: $\int \frac{1-\tan x}{1+\tan x} dx$

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256. Evaluate: $\int \frac{e^x - e^{-x}}{e^x + e^{-x}} dx$

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257. Evaluate: $\int \frac{1}{\sqrt{3x+4} - \sqrt{3x+1}} dx.$

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258. Evaluate: $\int \frac{dx}{(2x-7)\sqrt{(x-3)(x-4)}}$

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259. Evaluate: $\int \left(x+\frac{1}{x}\right)^{\frac{3}{2}}\left(\frac{x^2-1}{x^2}\right)dx$

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260. Find the values of $aandb$ such that $\int \frac{dx}{1+\sin x} = \tan\left(\frac{x}{2}+a\right)+b$

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

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

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263. Evaluate: $\int \frac{e^x (2-x^2) dx}{(1-x)\sqrt{1-x^2}}$

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264. Evaluate: $\int e^x (1+\tan x+\tan^2 x) dx$

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265. Evaluate: if $\int g(x)dx = g(x)$, *then* $\int g(x)\{f(x)+f'(x)\}dx$

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266. Evaluate: $\int \cos \sqrt{x} dx$

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

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268. Evaluate: if $\int f(x)dx = g(x), then \int f^{-1}(x)dx$

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269. Evaluate: $\int \cos x \log\left(tan\frac{x}{2}\right)dx$

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270. Evalaute: $\int\left(\frac{\log x - 1}{1 + (\log x)^2}\right)^2 dx$

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271. Evaluate: $\int \frac{x \sin^{-1} x}{\sqrt{1-x^2}} dx$

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272. Evaluate: $\int tan^{-1} \sqrt{x} dx$

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273. Evaluate $\int \sin^3 x dx$

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274. Evaluate $\int \sin 2x \sin 3x dx$.

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275. Evaluate: $\int a^{mx} b^{nx} dx$

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276. Evaluate the following integrals : $\int \frac{\tan x}{\sec x + \tan x} dx$

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277. If $\int \frac{1}{x + x^5} dx = f(x) + c$,then the value tof $\int \frac{x^4}{x + x^5} dx$.

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278. If $\int \frac{\left(x^3 + 8\right)(x - 1)}{x^2 - 2x + 4} dx$

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279. Integrate the functions $\frac{\sin^3 x + \cos^3 x}{\sin^2 x \cos^2 x}$

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280. Evaluate: $\int \tan^{-1}(\sec x + \tan x)dx, \ -\frac{\pi}{2}$

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

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282. Evaluate $\int\left(\frac{8x+13}{\sqrt{4x+7}}\right)dx$ (A) $\frac{1}{3}(4x+7)^{\frac{3}{2}} - \frac{1}{2}(4x+7)^{\frac{1}{2}} + c$ (B) $\frac{1}{6}(4x+7)^{\frac{5}{2}} - \frac{2}{3}(4x+7)^{\frac{3}{2}} + c$ (C) $\frac{1}{3}(4x+7)^{\frac{5}{2}} - \frac{1}{2}(4x+7)^{\frac{3}{2}} + c$ (D) $(4x+7)^{\frac{3}{2}} - \frac{1}{2}(4x+7)^{\frac{1}{2}} + c$

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283. Evaluate: $\int \frac{\sec x dx}{\sqrt{\cos 2x}}$

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284. Evaluate: $\int \sin^3 x \cos^2 x dx$

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

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286. Evaluate: $\int \frac{2x+1}{x^4+2x^3+x^2-1} dx$

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

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

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289. Evaluate: $\int \frac{\cos x}{\sin\left(x - \frac{\pi}{6}\right)\sin\left(x + \frac{\pi}{6}\right)} dx$

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290. Evaluate: $\int \frac{\sin x}{\sin 3x} dx.$

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291. Evaluate: $\int \frac{1}{3 + \sin 2x} dx$

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292. Evaluate: $\int \frac{1}{1+\sin x+\cos x}dx$

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293. Evaluate: $\int \frac{2x-1}{(x-1)(x+2)(x-3)}dx$

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294. Evaluate: $\int \tan^{-1}\sqrt{\frac{1-x}{1+x}}dx$

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295. Evaluate: $\int \frac{1}{\sin x-\sin 2x}dx$

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

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297. Evaluate: $\int \frac{(x-1)(x-2)(x-3)}{(x-4)(x-5)(x-6)} dx$

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298. Evaluate: $\int \frac{1-\cos x}{\cos x(1+\cos x)} dx$

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299. Evaluate : $\int (1-\cos x)\cos ec^2 x dx$

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300. Evaluate: $\int (\sec x + \tan x)^2 dx$

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301. Evaluate: $\int \frac{\sec x}{\sec x + \tan x} dx.$

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302. Evaluate: $\int \tan^{-1}\left\{\sqrt{\left(\frac{1-\cos 2x}{1+\cos 2x}\right)}\right\}$

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

Watch Video Solution

304. Evaluate $\int \frac{1-\cos x}{1+\cos x} dx.$

Watch Video Solution

305. Evaluate: $\int \sec^2 x \cos ec^2 x dx$.

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306. Evaluate $\int \frac{2^{x+1} - 5^{x-1}}{10^x}$

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307. Evaluate: $\int \frac{(1+x)^3}{\sqrt{x}} dx$.

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308. Evaluate: $\int \frac{\cos 2x \sin 4x dx}{\cos^4 x(1+\cos^2 2x)}$

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

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

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

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312. Find $\int \frac{dx}{\sqrt{x} + x}$

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

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

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

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316. Evaluate: $\int \sin^2 x \cos^2 x dx$

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317. Evaluate: $\int \frac{1}{x^4-1} dx$

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318. If the product of n positive numbers is n^n. Then their sum is

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

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

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321. Evaluate: $\int \frac{\sin x}{\sin 4x}dx$

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322. Evaluate: $\int \frac{\log_{ex} e \cdot \log_{e^2 x} e \cdot \log_{e^3 x} e}{x} dx$

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323. Evaluate: $\int e^{3 \log x} \left(x^4 + 1\right)^{-1} dx$

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324. Evaluate: $\int \frac{dx}{x^{\frac{2}{3}} \left(1 + x^{\frac{2}{3}}\right)}$

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