Question 1.

$\int_1^2 x^2 dx$

(a) 1

(b) $\frac{7}{3}$

(c) $\frac{1}{3}$

(d) 0

Question 2.

$\int_0^2 \left(x^2 + 3\right) dx$

(a) $\frac{25}{3}$

(b) $\frac{26}{3}$

(c) $\frac{24}{3}$

(d) None of these

Question 3.

Evaluate: $\int_0^{\pi/4} \sqrt{1 - \sin 2x} dx$

(a) √2 − 1

(b) √2 + 1

(c) √2

(d) None of these

Question 4.

Evaluate: $\int_0^{2\pi} \sin\left(\frac{\pi}{4} + \frac{x}{2}\right) dx$

(a) -2√2

(b) -2

(c) √2

(d) 2√2

Question 5.

Evaluate: $\int_1^2 \frac{dx}{x^2}$

(a) $\frac{1}{2}$

(b) 1

(c) 2

(d) -1

Question 6.

Evaluate: $\int_0^1 \sin^{-1}\left(\frac{2x}{1+x^2}\right)dx$

(a) $\frac{\pi}{2}$ – log2

(b) π

(c) $\frac{\pi}{4}$

(d) $\frac{\pi}{2}$ – log2

Question 7.

Evaluate : $\int_0^{\pi/2} \frac{\cos\theta}{(1+\sin\theta)(2+\sin\theta)}d\theta$

(a) $\log\left(\frac{4}{3}\right)$

(b) $\log\left(\frac{3}{4}\right)$

(c) log 4 + log 3

(d) None of these

Question 8.

Evaluate : $\int_0^1 \frac{x\tan^{-1}x}{(1+x^2)^{3/2}}dx$

(a) $\frac{4-\pi}{2\sqrt{2}}$

(b) $\frac{4+\pi}{2\sqrt{2}}$

(c) $\frac{4-\pi}{4\sqrt{2}}$

(d) None of these

Question 9.

Evaluate : $\int_0^{\pi/2} \frac{1}{3+2\cos x}dx$

(a) $\sqrt{5}\tan^{-1}\left(\frac{1}{\sqrt{5}}\right)$ (b) $\frac{\sqrt{5}}{2}\tan^{-1}\left(\frac{1}{\sqrt{5}}\right)$

(c) $\frac{2}{\sqrt{5}}\tan^{-1}\left(\frac{1}{\sqrt{5}}\right)$ (d) $-\frac{2}{\sqrt{5}}\tan^{-1}\left(\frac{1}{\sqrt{5}}\right)$

Question 10.

Evaluate : $\int_0^{\pi/2} \frac{1}{2\cos x+4\sin x}dx$

(a) $\sqrt{5}\log\left(\frac{3+\sqrt{5}}{2}\right)$ (b) $\frac{1}{\sqrt{55}}\log\left(\frac{3-\sqrt{5}}{}\right)$

(c) $\frac{1}{\sqrt{5}}\log\left(\frac{3+\sqrt{5}}{2}\right)$ (d) None of these

Question 11.

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

(a) $-4\tan x - 9\cot x - 25x + C$

(b) $4\tan x - 9\cot x - 25x + C$

(c) $-4\tan x + 9\cot x + 25x + C$

(d) $4\tan x + 9\cot x + 25x + C$

Question 12.

Evaluate : $\int (e^{x\log a} + e^{a\log x} + e^{\log a})dx$

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

(b) $\frac{a^x}{\log a} + \frac{x^{a+1}}{a-1} + ax^a + C$

(c) $\frac{a^x}{\log a} + \frac{x^a}{a+1} + ax^a + C$

(d) $\frac{a^x}{\log x} + \frac{x^{a+1}}{a+1} + a^a x + C$

Question 13.

Evaluate : $\int [\sec^2(7-4x)]dx$

(a) $-\frac{1}{4}\tan(7-4x) + C$ (b) $\frac{1}{4}\tan(7-4x) + C$

(c) $\frac{1}{4}\tan(7+4x) + C$ (d) $-\frac{1}{4}\tan(7x-4) + C$

Question 14.

Evaluate : $\int 2^{2^{2^x}} 2^{2^x} 2^x dx$

(a) $\frac{1}{(\log 2)^3} 2^{2^{2^x}} + C$ (b) $\frac{1}{(\log 2)^3} 2^{2^x} + C$

(c) $\frac{1}{(\log 2)^2} 2^{2^x} + C$ (d) $\frac{1}{(\log 2)^4} 2^{2^{2^x}} + C$

Question 15.

Evaluate : $\int \cos^3 x\, e^{\log \sin x}\, dx = \int \cos^3 x \sin x\, dx$

(a) $\frac{\cos^4 x}{4} + C$ (b) $-\frac{\cos^4 x}{4} + C$

(c) $\frac{\cos^4 x}{4x} + C$ (d) None of these

Question 16.

$\int \frac{\cot x}{\sqrt[3]{\sin}}\, dx =$

(a) $\frac{-3}{\sqrt[3]{\sin x}} + C$ (b) $\frac{-2}{\sin^3 x} + C$

(c) $\frac{3}{\sin^{1/3} x} + C$ (d) None of these

Question 17.

Evaluate: $\int \tan(x - \theta) \tan(x + \theta) \tan 2x\, dx$

(a) $\frac{1}{2} \log|\cos 2x| - \log|\cos(x - \theta)| + \log|\cos(x + \theta)| + C$

(b) $-\frac{1}{2} \log|\cos 2x| + \log|\cos(x - \theta)| + \log|\cos (x + \theta)| + C$

(c) $-\frac{1}{2} \log|\cos 2x| - \log|\cos(x - \theta)| - \log|\cos(x + \theta)| + C$

(d) None of these

Question 18.

Evaluate : $\int \frac{1}{\sqrt{\sin^3 x \cos^5 x}}\, dx$

(a) $\frac{2}{\sqrt{\tan x}} - \frac{2}{3}(\tan x)^{3/2} + C$

(b) $-\frac{2}{\sqrt{\tan x}} + \frac{2}{3}(\tan x)^{3/2} + C$

(c) $-\frac{2}{\sqrt{\tan x}} - \frac{2}{3}(\tan x)^{2/3} + C$ (d) None of these

Question 19.

Evaluate : $\int \sec^{4/3} x \operatorname{cosec}^{8/3} x \, dx$

(a) $\frac{3}{5}\tan^{-5/3} x - 3\tan^{1/3} x + C$

(b) $-\frac{3}{5}\tan^{-5/3} x + 3\tan^{1/3} x + C$

(c) $-\frac{3}{5}\tan^{-5/3} x - 3\tan^{1/3} x + C$

(d) None of these

Question 20.

Evaluate : $\int \frac{x^3 + x}{x^4 - 9} dx$

(a) $\frac{1}{4}\log|x^4 - 9| + \frac{1}{12}\log\left|\frac{x^2+3}{x^2-3}\right| + C$

(b) $\frac{1}{4}\log|x^4 - 9| - \frac{1}{12}\left|\frac{x^2-3}{x^2+3}\right| + C$

(c) $\frac{1}{4}\log|x^4 - 9| + \frac{1}{12}\log\left|\frac{x^2-3}{x^2+3}\right| + C$

(d) None of these

Question 21.

Evaluate : $\mathbf{I} = \int_0^{\pi/2} \frac{\sin 2x}{\sin^4 x + \cos^4 x}$

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{4}$

(c) $\frac{\pi}{3}$ (d) None of these

Question 22.

Evaluate : $\int_0^{\pi/2} \sqrt{\cos\theta}\,\sin^3\theta d\theta$

(a) $\frac{8}{21}$ (b) $\frac{7}{21}$ (c) $\frac{8}{23}$ (d) $\frac{7}{23}$

Question 23.

Evaluate : $\int_0^{\pi/2} \frac{\cos x}{\left(\cos\frac{x}{2}+\sin\frac{x}{2}\right)^3} dx$

(a) $2-\sqrt{2}$ (b) $2+\sqrt{2}$ (c) $3+\sqrt{3}$ (d) $3-\sqrt{3}$

Question 24.

If $A=\int_0^{\pi} \frac{\cos x}{(x+2)^2} dx$ **, then** $\int_0^{\pi/2} \frac{\sin 2x}{(x+1)} dx$ **is equal to**

(a) $A-\frac{1}{2}-\frac{1}{\pi+2}$ (b) $\frac{1}{2}+\frac{1}{\pi+2}-A$

(c) $\frac{1}{\pi+2}-A$ (d) $1+\frac{1}{\pi+2}-A$

Question 25.

The value of $\int_{-\pi/2}^{\pi/2} \frac{dx}{e^{\sin x}+1}$ **is equal to**

(a) 0 (b) 1 (c) $-\frac{\pi}{2}$ (d) $\frac{\pi}{2}$

Question 26.

The value of $\int_0^{2\pi} \frac{x \sin^{2n} x}{\sin^{2n} x + \cos^{2n} x} dx$ **is**

(a) $\frac{\pi^2}{4}$ (b) $\frac{\pi^2}{2}$ (c) π^2 (d) $2\pi^2$

Question 27.

$\int \frac{dx}{\sin(x-a)\sin(x-b)}$ **is equal to**

(a) $\sin(b-a)\log\left|\frac{\sin(x-b)}{\sin(x-a)}\right| + C$

(b) $\operatorname{cosec}(b-a)\log\left|\frac{\sin(x-a)}{\sin(x-b)}\right| + C$

(c) $\operatorname{cosec}(b-a)\log\left|\frac{\sin(x-b)}{\sin(x-a)}\right| + C$

(d) $\sin(b-a)\log\left|\frac{\sin(x-a)}{\sin(x-b)}\right| + C$

Question 28.

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

(a) $\frac{e^x}{1+x^2} + C$ (b) $\frac{-e^x}{1+x^2} + C$

(c) $\frac{e^x}{(1+x^2)^2} + C$ (d) $\frac{-e^x}{(1+x^2)^2} + C$

Question 29.

$\int \frac{x^3}{x+1}$ **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) $x-\frac{x^2}{2}+\frac{x^3}{3}-\log|1+x|+C$

Question 30.

If $\int \frac{x^3 dx}{\sqrt{1+x^2}} = a(1+x^2)^{3/2} + b\sqrt{1+x^2} + C$ **, then**

(a) $a=\frac{1}{3}, b=1$ (b) $a=\frac{-1}{3}, b=1$

(c) $a=\frac{-1}{3}, b=-1$ (d) $a=\frac{1}{3}, b=-1$

Question 31.

$\int_{-\pi/4}^{\pi/4} \frac{dx}{1+\cos 2x} dx$ **is equal to**

(a) 1 (b) 2 (c) 3 (d) 4

Question 32.

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

(a) $\log\left|e^{-x}+\sqrt{e^{-2x}-1}\right|+C$

(b) $-\log\left|e^{-x}+\sqrt{e^{-2x}-1}\right|+C$

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

(d) None of these

Question 33.

Evaluate : $\int \frac{1}{x(x^n+1)}dx$

(a) $\log\left|\frac{x^n}{x^n+1}\right|+C$ (b) $\frac{1}{n}\log\left|\frac{x^n}{x^n+1}\right|+C$

(c) $\frac{1}{n}\log\left|\frac{x^n+1}{x^n}\right|+C$ (d) None of these

Question 34.

Evaluate : $\int \frac{1}{1+3\sin^2 x+8\cos^2 x}dx$

(a) $\frac{1}{6}\tan^{-1}(2\tan x)+C$ (b) $\tan^{-1}(2\tan x)+C$

(c) $\frac{1}{6}\tan^{-1}\left(\frac{2\tan x}{3}\right)+C$ (d) None of these

Question 35.

The value of $\int \frac{dx}{\sqrt{x}+\sqrt[3]{x}}$ **is**

(a) $3\sqrt{x}+3(\sqrt[3]{x})-6\sqrt[6]{x}+\log(\sqrt[6]{x}+1)+C$

(b) $2\sqrt{x}+6(\sqrt[6]{x})-6\log(\sqrt[6]{x}+1)+C$

(c) $2\sqrt{x}-3(\sqrt[3]{x})+6(\sqrt[6]{x})-6\log(\sqrt[6]{x}+1)+C$

(d) None of these

Answer:

Question 36.

Evaluate : $\int \frac{\tan\theta+\tan^3\theta}{1+\tan^3\theta}d\theta$

(a) $-\frac{1}{3}\log|1+\tan\theta|-\frac{1}{6}\log|\tan^2\theta-\tan\theta+1|$

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

(b) $-\frac{1}{3}\log|1+\tan\theta|+\frac{1}{6}\log|\tan^2\theta-\tan\theta+1|$

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

(c) $-\frac{1}{3}\log|1+\tan\theta|+\frac{1}{6}\log|\tan^2\theta+\tan\theta+1|$

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

(d) None of these

Question 37.

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

(a) $\log|\sec x+\tan x|-2\tan(x/2)+C$

(b) $\log|\sec x-\tan x|-2\tan(x/2)+C$

(c) $\log|\sec x+\tan x|+2\tan(x/2)+C$

(d) None of these

Question 38.

If $\int \frac{e^x(1+\sin x)dx}{1+\cos x}=e^x f(x)+C$ **, then** $f(x)$ **is equal to**

(a) $\sin\frac{x}{2}$ (b) $\cos\frac{x}{2}$ (c) $\tan\frac{x}{2}$ (d) $\log\frac{x}{2}$

Question 39.

$\int \frac{\cos x-1}{\sin x+1}e^x dx$ **is equal to**

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

(c) $\frac{e^x}{x+4}+C$ (d) $-\frac{e^x\cos x}{1+\sin x}+C$

Question 40.

$\int\left(\frac{x+2}{x+4}\right)^2 e^x dx$ **is equal to**

(a) $e^x\left(\frac{x}{x+4}\right)+C$ (b) $e^x\left(\frac{x+2}{x+4}\right)+C$

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

Answer:

Question 41.

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

(a) $-\frac{1}{2}(x+1)\sqrt{x^2+2x+5}$

$$+2\log\left|(x+1)+\sqrt{x^2+2x+5}\right|+C$$

(b) $\frac{1}{2}(x+1)\sqrt{x^2+2x+5}$

$$+2\log\left|(x+1)+\sqrt{x^2+2x+5}\right|+C$$

(c) $-\frac{1}{2}(x+1)\sqrt{x^2+2x+5}$

$$-2\log\left|(x+1)+\sqrt{x^2+2x+5}\right|+C$$

(d) None of these