Important Questions - (Unit-02)

2020 (ODD)

① The value of $\int \cos(3x+5)\,dx$ is :

(a) $\sin\left(\frac{3x+5}{3}\right)+c$

(b) $\frac{1}{3}\sin(3x+5)+c$

(c) $\cos(3x+5)+c$

(d) None of these

② The value of $\int \sqrt{2x+3}\, dx$ is:

(a) $\sqrt{2x+3} + c$

(b) $(2x+3)^{3/2} + c$

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

(d) None of these

(3) The value of $\int \sec x^\circ \tan x^\circ \, dx$ is

(a) $\frac{180}{\pi} \sec x^\circ + C$

(b) $\frac{180}{\pi} \tan x^\circ + C$

(c) $\frac{\pi}{180} \sec x^\circ + C$

(d) None of these

④ The value of $\int (\cos x + \sin x)^2 \, dx$ is :

ⓐ $\frac{\cos 2x}{2} + c$

ⓑ $x + \frac{\cos 2x}{2} + c$

ⓒ $x - \frac{\cos 2x}{2} + c$

ⓓ None of these

⑤ The value of $\int \cot x \, dx$ is :

(a) $\log(\sin x) + c$

(b) $\log(\cos x) + c$

(c) $\log(\tan x) + c$

(d) None of these

(6) The value of $\int_0^{\pi/2} \cos x \, dx$ is :

(a) 0

(b) $1/2$

(c) 1

(d) None of these

(7) The value of $\int_{-1}^{1} x^3 \cdot e^{x^2} dx$ is :

(a) $3/2$

(b) 0

(c) 1

(d) None of these

⑧ The value of $\int_0^\infty e^{-x}\,dx$ is :

ⓐ 0

ⓑ 1

ⓒ e

ⓓ ∞

(9) The value of $\int \frac{e^x}{x}(1+x\log x)\,dx$ is :

(a) xe^x

(b) e^x/x

(c) $e^x \log x$

(d) None of these

(10) If $f(x)$ is an even function, then $\int_{-a}^{a} f(x)\,dx$ is:

(a) 0

(b) $2\int_{0}^{a} f(x)\,dx$

(c) $\int_{0}^{2a} f(x)\,dx$

(d) None of these

(11) The value of $\int_{-1}^{1} |x|\, dx$ is :

(a) 0

(b) 1

(c) -1

(d) None of these

2019 (Odd)

(12) $\int \frac{-1}{x\sqrt{x^2-1}}\,dx = ?$

(a) $\sec^{-1}x + c$

(b) $\operatorname{cosec}^{-1}x + c$

(c) $\cot^{-1}x + c$

(d) None of these

(13) $\int \tan x \, dx = ?$

(a) $\log \cot x + c$

(b) $\log \operatorname{cosec} x + c$

(c) $\log \sec x + c$

(d) None of these

(14) $\int_0^{\frac{\pi}{4}} \tan^2 x \, dx = ?$

(a) $1 + \frac{\pi}{4}$

(b) $\frac{\pi}{4} - 1$

(c) $1 - \frac{\pi}{4}$

(d) None of these

(15) If $f(-x) = -f(x)$, then $\int_{-a}^{a} f(x)\,dx = ?$

(a) 0

(b) $2\int_{0}^{a} f(x)\,dx$

(c) $\int_{0}^{2a} f(x)\,dx$

(d) None of these

(16) $\int_0^{\sqrt{3}} \frac{1}{1+x^2}\,dx = ?$

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

(b) $\frac{\pi}{6}$

(c) $\frac{\pi}{12}$

(d) None of these

(17) $\int_1^2 |x-3|\, dx = ?$

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

(b) $\frac{3}{2}$

(c) 0

(d) None of these

(18) $\int_1^e \frac{1+\log x}{x}\, dx = ?$

(a) $\frac{3}{2}$

(b) $\frac{5}{2}$

(c) e

(d) None of these

(19) $\int e^x (\tan x + \sec^2 x)\, dx = ?$

(a) $-e^x \tan x + c$

(b) $e^x \tan x + c$

(c) $e^x \sec x + c$

(d) None of these

(20) $\int e^{2x+3}\,dx = ?$

(a) $\frac{1}{2}e^{2x+3} + c$

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

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

(d) None of these

(21) $\int \frac{6x^2+5}{2x^3+5x+9}\,dx = ?$

(a) $\log|6x^2+5| + c$

(b) $\log|2x^3+5x+9| + c$

(c) $\log|2x^2+5x| + c$

(d) None of these

(22) $\int \log x \, dx = ?$

(a) $x + x\log x + c$

(b) $x\log x - x + c$

(c) $x + \log x + c$

(d) None of these

(23) $\int_0^{\pi/2} \cos x \, dx = ?$

(a) 1

(b) 0

(c) -1

(d) None of these

(24) $\int \cos x^\circ \, dx = ?$

(a) $-\frac{180^\circ}{\pi} \sin x^\circ + c$

(b) $-\frac{1}{\pi} \sin x^\circ + c$

(c) $\frac{180^\circ}{\pi} \sin x^\circ + c$

(d) None of these

2018 (ODD)

(25) $\int \sin x^\circ \, dx = ?$

(a) $-\frac{180^\circ}{\pi} \cos x^\circ + c$

(b) $\frac{180^\circ}{\pi} \cos x^\circ + c$

(c) $\frac{180^\circ}{\pi} \sin x^\circ + c$

(d) None of these

(27) $\int \sin(2x+3)\,dx = ?$

(a) $\frac{1}{2}\cos(2x+3)+c$

(b) $-\frac{1}{2}\cos(2x+3)+c$

(c) $\frac{1}{3}\cos(2x+3)+c$

(d) None of these

(26) $\int \sec x \, dx = ?$

(a) $\log \cot\left(\frac{\pi}{4} + \frac{x}{2}\right) + c$

(b) $\log \operatorname{Cosec}\left(\frac{\pi}{4} + \frac{x}{2}\right) + c$

(c) $\log \tan\left(\frac{\pi}{4} + \frac{x}{2}\right) + c$

(d) None of these

(28) $\int x e^x \, dx = ?$

(a) $(x-1)e^x + c$

(b) $(x+1)e^x + c$

(c) $(1-x)e^x + c$

(d) None of these

(29) $\int \frac{3x^2 - 10x}{x^3 - 5x^2 - 3}\, dx = ?$

(a) $\log(x^3 - 5x^2 - 3) + c$

(b) $\log(x^2 - 5x - 3) + c$

(c) $\log(x^2 - 5) + c$

(d) None of these

(30) $\int_0^1 \frac{dx}{1+x^2} = ?$

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

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

(c) 0

(d) None of these

(31) $\int \frac{4\,dx}{16+x^2} = ?$

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

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

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

(d) None of these

(32) The area enclosed between the curve $y = f(x)$, x-axis and two lines $x = a$, $x = b$ perpendicular to x-axis is:

(a) $\int_a^b y^2 \, dx$

(b) $\int_a^b y \, dx$

(c) $\int_a^b x \, dy$

(d) None of these

(33) $\int_0^{\frac{\pi}{2}} \frac{\sqrt{\cot x}}{\sqrt{\cot x}+\sqrt{\tan x}}\, dx = ?$

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

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

(c) $\frac{\pi}{8}$

(d) None of these

(34) $\int_0^{\pi/2} \log \sin x = ?$

(a) $\int_0^{\pi/2} \log \cos x$

(b) $-\frac{\pi}{2} \log 2$

(c) Both (a) and (b)

(d) None of these

(35) If $\int_{-a}^{a} f(x)\,dx = 0$, then function $f(x)$ is

(a) Even function

(b) Odd function

(c) Implicit function

(d) None of these

(36) $\int_0^{\frac{\pi}{4}} \cos 2x \, dx = ?$

(a) $1/2$

(b) $-1/2$

(c) $1/4$

(d) $-1/4$

(37) $$\int_0^{\pi/2} \frac{\sqrt{\sin x}}{\sqrt{\sin x}+\sqrt{\cos x}}\,dx = ?$$

(a) $\pi/2$

(b) $\pi/4$

(c) $\pi/8$

(d) 0

(38) $\int \sqrt{x^2-9}\, dx = ?$

(a) $\frac{x}{2}\sqrt{x^2-9} + \frac{1}{2}\sin^{-1}\left(\frac{x}{3}\right) + c$

(b) $\frac{x}{2}\sqrt{x^2-9} + \frac{9}{2}\sinh^{-1}\left(\frac{x}{3}\right) + c$

(c) $\frac{x}{2}\sqrt{x^2-9} - \frac{9}{2}\cosh^{-1}\left(\frac{x}{3}\right) + c$

(d) None of these

(39) $\int \sqrt{2+x^2}\, dx = ?$

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

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

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

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

(40) $\int \sqrt{5-x^2}\, dx = ?$

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

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

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

(d) None of these

(41) $\int \frac{dx}{\sqrt{3-x^2}} = ?$

(a) $\sin^{-1}\left(\frac{x}{3}\right)+c$

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

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

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

(42) $\int \frac{dx}{\sqrt{x^2-25}} = ?$

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

(b) $\sinh^{-1}\left(\frac{x}{5}\right)+c$

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

(d) None of these

(43) $\int \frac{1}{\sqrt{x^2+5}}\,dx = ?$

(a) $\cosh^{-1}\left(\frac{x}{5}\right)+c$

(b) $\sinh^{-1}\left(\frac{x}{\sqrt{5}}\right)+c$

(c) $\cosh^{-1}\left(\frac{\sqrt{x}}{5}\right)+c$

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

(44) $\int \frac{1}{2-x^2}\,dx = ?$

(a) $\frac{1}{2}\log\left|\frac{x+2}{x-2}\right| + c$

(b) $\frac{1}{2\sqrt{2}}\log\left|\frac{2+x}{2-x}\right| + c$

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

(d) $\frac{1}{2\sqrt{2}}\log\left|\frac{x-\sqrt{2}}{x+\sqrt{2}}\right| + c$

(45) $\int \sin^3 x \cos^4 x \, dx = ?$

(a) $\frac{\cos^7 x}{7} - \frac{\cos^5 x}{5} + c$

(b) $\frac{\sin^7 x}{7} - \frac{\sin^6 x}{6} + c$

(c) $-\frac{\cos^7 x}{7} + \frac{\cos^5 x}{5} + c$

(d) $\frac{\sin^7 x}{7} + c$

(46) $\int \tan^4 x \cdot \sec^4 x \, dx = ?$

(a) $\frac{\tan^7 x}{7} - \frac{\tan^6 x}{6} + c$

(b) $\frac{\tan^5 x}{5} + \frac{\tan^7 x}{7} + c$

(c) $\frac{\tan^5 x}{5} - \frac{\tan^7 x}{7} + c$

(d) None of these

(47) $\int \frac{x^5}{1+x^{12}}\,dx = ?$

(a) $\frac{1}{6}\tan^{-1}(x^6) + c$

(b) $\frac{1}{6}\tan^{-1}(x^{12}) + c$

(c) $\frac{1}{6}\sin^{-1}(x^6) + c$

(d) $\frac{1}{6}\cot^{-1}(x^6) + c$

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

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

(b) $\frac{1}{x} + c$

(c) $\log(\log x) + c$

(d) None of these.

(49) $\int a^{bx+c}\,dx = ?$

(a) $\frac{1}{b}\,a^{bx+c} + k$

(b) $\frac{1}{a}\,a^{bx+c} + k$

(c) $\frac{1}{b}\,\frac{a^{bx+c}}{\log a} + k$

(d) $\frac{1}{b}\,a^{bx+c}\log a + k$

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