

- a) 0 b) 1 c) ∞ d) None of these
9. The value of $\int_{-1}^1 [x[1 + \sin \pi x]] dx$ is ($[\cdot]$ denotes the greatest integer)
- a) 2 b) 0 c) 1 d) None of these
10. If $\int_0^{\infty} e^{-x^2} dx = \sqrt{\frac{\pi}{2}}$ then $\int_0^{\infty} e^{-ax^2} dx, a > 0$ is
- a) $\frac{\sqrt{\pi}}{2}$ b) $\frac{\sqrt{\pi}}{2a}$ c) $2\frac{\sqrt{\pi}}{a}$ d) $\frac{1\sqrt{\pi}}{2a}$
11. If $\int \frac{2^x}{\sqrt{1-4^x}} dx = K \sin^{-1}(2^x) + C$, then K is equal to
- a) $\log 2$ b) $\frac{1}{2} \log 2$ c) $\frac{1}{2}$ d) $\frac{1}{\log 2}$
12. The value of the integral $\int_{-\pi}^{\pi} (\cos ax - \sin bx)^2 dx$, where (a and b integers), is
- a) $-\pi$ b) 0 c) π d) 2π
13. $\int \frac{mx^{m+2n-1} - nx^{n-1}}{x^{2m+2n} + 2x^{m+n} + 1} dx$ is equal to
- a) $\frac{x^m}{x^{m+n} + 1} + c$ b) $\frac{x^n}{x^{m+n} + 1} + c$ c) $\frac{x^{m+n} - 1}{x^{m+n} + 1} + c$ d) $-\frac{x^n}{x^{m+n} + 1} + c$
14. The value of $\int_0^{16\pi/3} |\sin x| dx$, is
- a) 21 b) 21/2 c) 10 d) 11
15. If $f(x)$ and $g(x), x \in R$ are continuous functions, then value of integral $\int_{-\pi/2}^{\pi/2} [f(x) + f(-x)][g(x) - g(-x)] dx$ is
- a) π b) $\frac{\pi}{2}$ c) 1 d) 0
16. $\int \frac{\sqrt{\tan x}}{\sin x \cos x} dx$ is equal to
- a) $2\sqrt{\tan x} + C$ b) $2\sqrt{\cot x} + C$ c) $\frac{\sqrt{\tan x}}{2} + C$ d) None of these
17. $\int_0^1 \sin \left\{ 2 \tan^{-1} \sqrt{\frac{1+x}{1-x}} \right\} dx =$
- a) $\pi/6$ b) $\pi/4$ c) $\pi/2$ d) π
18. If $\int_{-\pi/3}^{\pi/3} \left(\frac{a}{3} |\tan x| + \frac{b \tan x}{1 + \sec x} \right) dx = 0$ where a, b, c are constants, then $c =$
- a) $a \ln 2$ b) $\frac{a}{\pi} \ln 2$ c) $-\frac{a}{\pi} \ln 2$ d) $\frac{2a}{\pi} \ln 2$
19. If the tangent to the graph function $y = f(x)$ makes angles $\frac{\pi}{4}$ and $\frac{\pi}{3}$ with the x -axis is at the point $x = 2$ and $x = 4$ respectively, the value of $\int_2^4 f'(x) f''(x) dx$
- a) $f(4)f(2)$ b) $f(4)$ c) $f(2)$ d) 1

s20. $\int \frac{dx}{\cos^3 \sqrt{2} \sin 2x}$ is equal to

a) $\sqrt{\tan x} + \frac{\tan^{5/2} x}{5} + c$

c) $2\sqrt{\tan x} + \frac{2}{5}\tan^{5/2} x + c$

b) $\sqrt{\tan x} + \frac{2}{5}\tan^{5/2} x + c$

d) None of these

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