



Assignment class XII definite

integrals

1. $\int_0^{\pi/2} \cos^3 x dx$
2. $\int_0^{\pi/4} \sqrt{1 - \sin 2x} dx$
3. $\int_0^4 \frac{1}{x^2 + 2x + 3} dx$
4. $\int_0^1 \frac{2x}{5x^2 + 1} dx$
5. $\int_1^2 \frac{\log x}{x^2} dx$
6. $\int_1^2 \frac{1}{x(1+x^2)} dx$
7. $\int_{\pi/4}^{\pi/2} \cos 2x \log \sin x dx$
8. $\int_1^2 \left(\frac{x-1}{x^2}\right) e^x dx$
9. $\int_0^{\pi/2} \frac{\cos \theta}{(1 + \sin \theta)(2 + \sin \theta)} dx$
10. $\int_0^{1/\sqrt{2}} \frac{\sin^{-1} x}{(1-x^2)^{3/2}} dx$
11. $\int_0^{\pi/2} \cos^4 x dx$
12. $\int_0^{\pi/2} (\sqrt{\tan x} + \sqrt{\cot x}) dx$
13. $\int_0^{\pi} \frac{1}{5 + 4 \cos x} dx$
14. $\int_0^{\pi/2} \frac{1}{2 \cos x + 4 \sin x} dx$
15. $\int_0^{\pi/2} \frac{\cos x}{3 \cos x + \sin x} dx$
16. $\int_0^{\pi/2} \frac{\sin 2x}{\sin^4 x + \cos^4 x} dx$
17. $\int_0^1 \frac{e^x}{1 + e^{2x}} dx$
18. $\int_0^1 \frac{\sqrt{\tan^{-1} x}}{1+x^2} dx$
19. $\int_0^{\pi/4} \sec^4 x dx$
- 20.
21. $\int_0^1 \sqrt{\frac{1-x}{1+x}} dx$
22. $\int_1^2 \frac{1}{x(1+\log x)^2} dx$
23. $\int_0^{\pi} |\cos x| dx$
24. $\int_{-1}^1 e^{|x|} dx$
25. $\int_{-1}^1 f(x) dx$, where $f(x) = \begin{cases} 1 - 2x & x \leq 0 \\ 1 + 2x & x \geq 0 \end{cases}$
26. $\int_0^3 [x] dx$
27. $\int_0^2 [x^2] dx$
28. $\int_{-1}^1 |2x + 1| dx$
29. $\int_{-\pi/2}^{\pi/2} (\sin|x| + \cos|x|) dx$
30. $\int_{-\pi/4}^{\pi/4} |\sin x| dx$
31. $\int_1^2 \frac{\sqrt{x}}{\sqrt{3-x} + \sqrt{x}} dx$
32. $\int_0^{\pi/2} \frac{\sin x}{\sin x + \cos x} dx$
33. $\int_0^{\pi/2} \frac{\sin^2 x}{\sin x + \cos x} dx$
34. $\int_0^{\pi/2} \frac{\sin^n x}{\sin^n x + \cos^n x} dx$
35. $\int_0^{\pi/2} \sin 2x \log(\tan x) dx$
36. $\int_{-\pi/4}^{\pi/4} x^3 \sin^4 x dx$
37. $\int_{-a}^a \sqrt{\frac{a-x}{a+x}} dx$
38. $\int_0^{\pi} \frac{x \tan x}{\sec x \operatorname{cosec} x} dx$
39. $\int_0^1 \cot^{-1}(1 - x - x^2) dx$

40. $\int_{-1}^1 \log\left(\frac{2-x}{2+x}\right) dx$

41. $\int_0^1 \sin^{-1}\left(\frac{2x}{1-x^2}\right) dx$

42. $\int_0^1 \frac{\log(1+x)}{1+x^2} dx$

43. $\int_0^1 \cos^{-1}\left(\frac{1-x^2}{1+x^2}\right) dx$

44. $\int_0^{\pi/2} \frac{1}{1+\sqrt{\cot x}} dx$

45. $\int_0^{\infty} \frac{x(\tan^{-1}x)^2}{(1+x^2)^{3/2}} dx$

46. $\int_0^{\pi/2} x^2 \cos 2x dx$

47. $\int_{-\infty}^{\infty} \frac{1}{9+x^2} dx$

48. $\int_0^1 x \sqrt{\frac{1-x^2}{1+x^2}} dx$

49. $\int_0^{\pi/2} \frac{1}{1+\tan^3 x} dx$

50. $\int_0^1 x(1-x)^5 dx$

51. $\int_0^a \frac{1}{x+\sqrt{a^2-x^2}} dx$

52. $\int_0^{\infty} \frac{1}{(x^2+a^2)(x^2+b^2)} dx$

53. $\int_0^{2\pi} e^x \cos\left(\frac{\pi}{4} + \frac{x}{2}\right) dx$

54. $\int_{-5}^0 (|x| + |x+2| + |x+5|) dx$

55. *if* $\int_0^a \sqrt{x} dx =$

$2a \int_0^{\pi/2} \sin^3 x dx$, find the value of $\int_a^{a+1} x dx$

Evaluate the following integrals as

limit of sums:

56. $\int_0^2 (2x+1) dx$

57. $\int_1^3 (x^2+x) dx$

58. $\int_a^b e^x dx$