



MATHS

BOOKS - ARIHANT PUBLICATION

INTEGRATION

Sample Questions

1. Evaluate the following integrals :

$$\int x^6 dx$$



Watch Video Solution

2. Evaluate the following integrals :

$$\int \frac{1}{x^{3/4}} dx$$



[Watch Video Solution](#)

3. Evaluate the following integrals :

$$\int 5^x dx$$



[Watch Video Solution](#)

4. Evaluate the following integrals :

$$\int a^{3 \log_a x} dx$$



[Watch Video Solution](#)

5. Evaluate the integrals or write a primitive of

$$\int(\sin x + \cos x) dx$$



[Watch Video Solution](#)

6. Evaluate the integrals or write a primitive of

$$\int \sin x \left(\cot x + \frac{1}{\sin^3 x} \right) dx$$



[Watch Video Solution](#)

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



[Watch Video Solution](#)

8. Find the anti - derivative F of f defined by $f(x) = 4x^5 - 6x$, where $f(0) = 2$

First, find the integral of $f(x)$ and say it $F(x)$. Further, use the condition $f(0)=2$ to get the value of C. Finally put the value of C in $f(x)$ and get the required result.

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

10. Evaluate $\int \cos 6x \sqrt{1 + \sin 6x} dx$.

 [Watch Video Solution](#)

11. Integrate the function w.r.t. x $\frac{\tan^4 \sqrt{x} \sec^2 \sqrt{x}}{\sqrt{x}}$



Watch Video Solution

12. Evaluate the following integrals :

$$\int \sqrt{ax + b} dx.$$



Watch Video Solution

13. Evaluate the following integrals :

$$\int \frac{dx}{\sqrt{x+a} + \sqrt{x+b}}$$



Watch Video Solution

14. Evaluate $\int \sin 2x \cos 4x dx$



Watch Video Solution

15. Evaluate $\int \cos 2x \cos 4x \cos 6x dx$



Watch Video Solution

16. Evaluate $\int \sin^2 x dx$



Watch Video Solution

17. Evaluate $\int \tan^4 \theta d\theta$



Watch Video Solution

18. Evaluate $\int \tan^2 x \sec^4 x dx$.

 [Watch Video Solution](#)

19. Evaluate $\int \frac{\cos 4x - \cos 2x}{\sin 4x - \sin 2x} dx$

 [Watch Video Solution](#)

20. Evaluate $\int \tan^{-1} \left(\frac{1 - \cos x}{\sin x} \right) dx$

 [Watch Video Solution](#)

21. Evaluate $\int \tan^{-1} \left(\frac{\cos x - \sin x}{\cos x + \sin x} \right) dx$

 [Watch Video Solution](#)

 [Watch Video Solution](#)

22. find the following integrals :

$$\int \frac{dx}{x^2 - 16}$$

 [Watch Video Solution](#)

23. find the following integrals :

$$\int \frac{dx}{\sqrt{9 - 25x^2}}$$

 [Watch Video Solution](#)

24. Evaluate $\int \frac{1}{9x^2 + 6x + 5} dx$

 [Watch Video Solution](#)

25. Evaluate $\int \frac{dx}{\sqrt{3-x+x^2}}$

 [Watch Video Solution](#)

26. Evaluate $\int \frac{x+2}{2x^2+6x+5} dx$

 [Watch Video Solution](#)

27. Evaluate $\int \frac{2x+1}{\sqrt{x^2+10x+29}} dx.$

 [View Text Solution](#)

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

 [Watch Video Solution](#)

29. Evaluate $\int \frac{dx}{1 - 3 \sin x}$.

Use the substitution $\sin x = \frac{2 \tan \frac{x}{2}}{1 + \tan^2 \frac{x}{2}}$, further put

$\tan \frac{x}{2} = t$ and then integrate it.

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

31. Evaluate $\int \frac{4 \sin x + 5 \cos x}{5 \sin x + 4 \cos x} dx$

It is an integration of the form $\int \frac{a \sin x + b \cos x}{c \sin x + d \cos x} dx$. So, write

$$4 \sin x + 5 \cos x = a \frac{d}{dx} (5 \sin x + 4 \cos x) + b(5 \sin x + 4 \cos x)$$

 [Watch Video Solution](#)

32. Evaluate $\int \frac{12 \sin x - \cos x}{\sin x \cos x} dx$

 [Watch Video Solution](#)

33. Evaluate $\int x \cos x dx$.

Here, integrand is the product of algebraic and trigonometric functions and algebraic function comes first in the word ILATE, so we consider it as 1st function and trigonometric function as 2nd function.

 [Watch Video Solution](#)

34. Evaluate $\int e^x \cos x dx$



 [Watch Video Solution](#)

35. Integrate the function $\sqrt{1 - 4x^2}$

 [Watch Video Solution](#)

36. Evaluate $\int \sqrt{x^2 - 8x + 7} dx$.

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

38. Evaluate $\int (x - 3) \sqrt{x^2 + 3x - 18} dx$.



Watch Video Solution

39. Evaluate $\int e^x (\sin x + \cos x) dx$.



Watch Video Solution

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

Here, the integrand $\frac{x - 3}{(x - 1)^3}$ is not in the form of $e^x [f(x) + f'(x)]$, so we firstly convert it in the form of $e^x [f(x) + f'(x)]$ and then simplify it



Watch Video Solution

41. Resolve $\frac{x^3 - 6x^2 + 10x - 2}{x^2 - 5x + 6}$ into partial fractions.

 [Watch Video Solution](#)

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

First write the given integrand into partial fraction form and then integrate.

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

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

It is an integral of the form $\int \frac{dx}{(ax+b)\sqrt{px+q}}$, so put

$px + q = t^2$ and then integrate it.

 [View Text Solution](#)

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

It is an integral of the form $\int \frac{dx}{(px + q)\sqrt{ax^2 + bx + C}}$, so

put $px + q = \frac{1}{t}$ and then integrate it.

 [View Text Solution](#)

46. Evaluate $\int_1^3 (2x - 5)dx$, as limit of sum.

 [Watch Video Solution](#)

47. Evaluate $\int_1^4 (x^2 - x)dx$, as limit of sum.



[Watch Video Solution](#)

48. Evaluate $\int_0^4 (x + e^{2x}) dx$, as limit of sum.



[Watch Video Solution](#)

49. Evaluate $\int_1^2 (4x^3 - 5x^2 + 6x + 9) dx$



[Watch Video Solution](#)

50. Evaluate $\int_0^{\pi/2} e^x (\sin x - \cos x) dx$.



[Watch Video Solution](#)

51. Evaluate $\int_0^1 \frac{\tan^{-1} x dx}{1 + x^2}$

 [Watch Video Solution](#)

52. Evaluate $\int_1^3 \frac{1}{x(1 + \log x)} dx.$

 [Watch Video Solution](#)

53. Evaluate $\int_0^{\pi/2} \sqrt{\sin \phi} \cos^5 \phi d\phi.$

 [Watch Video Solution](#)

54. Evaluate $\int_0^4 |x - 1| dx.$

Here, the given integrand is in the form of absolute function

and we define the absolute function $|x - a|$ as

$$|x - a| = \begin{cases} x - a, & \text{if } x \geq a \\ -(x - a), & \text{if } x < a \end{cases}$$

By using it we convert the given integrand in simplest form and then integrate it.

 [Watch Video Solution](#)

55. Evaluate $\int_2^5 [|x - 2| + |x - 3| + |x - 5|] dx$.

 [Watch Video Solution](#)

56. Evaluate $\int_0^{\pi/2} \frac{\sin^3 x}{\sin^3 x + \cos^3 x} dx$.

 [Watch Video Solution](#)

57. Evaluate $\int_0^{\pi/4} \log(1 + \tan x) dx$.

 [Watch Video Solution](#)

58. Evaluate the integral $\int_0^{2\pi} \frac{1}{1 + e^{\sin x}} dx$.

 [Watch Video Solution](#)

59. Evaluate $\int_0^{2\pi} \cos^5 x dx$.

 [Watch Video Solution](#)

60. Evaluate the integral $\int_{-\pi/2}^{\pi/2} \sin^2 x dx$.

 [Watch Video Solution](#)

Part I Questions For Practice 1 Mark

1. What do you mean by integration ? Write your answer in one sentence.

 [Watch Video Solution](#)

2. Integrate $\left(\frac{2a}{\sqrt{x}} - \frac{b}{x^2} + 3c\left(\sqrt[3]{x^2}\right) \right)$ w.r.t. x.

 [Watch Video Solution](#)

3. Write the anti - derivative

$$\left(3\sqrt{x} + \frac{1}{\sqrt{x}} \right)$$



[Watch Video Solution](#)

4. Evaluate the following integrals

$$\int (3 \cos e^{c^2 x} - 5x + \sin x) dx$$



[Watch Video Solution](#)

5. Evaluate the following integrals

$$\int \frac{x^3 + 5x^2 - 4}{x^2} dx.$$



[Watch Video Solution](#)

6. Evaluate the following integrals

$$\int \operatorname{cosec} x (\operatorname{cosec} x + \cot x) dx$$



[Watch Video Solution](#)

 Watch Video Solution

7. Evaluate the following integrals

$$\int \frac{2 \cos x}{\sin^2 x} dx.$$

 Watch Video Solution

8. Evaluate the following integrals

$$\int \frac{1}{\sin^2 x \cdot \cos^2 x} dx.$$

 Watch Video Solution

9. Evaluate the following integrals

$$\int \frac{2 + 3 \cos x}{\sin^2 x} dx.$$

 Watch Video Solution

10. Write the value of $\int \frac{(1 - \sin x)}{\cos^2 x} dx$.



Watch Video Solution

11. What is the value of $\int \frac{d}{dx} f(x) dx - \frac{d}{dx} \int f(x) dx$?



Watch Video Solution

12. Evaluate $\int e^{\ln(\operatorname{cosec}^2 x - \cot^2 x)} dx$.



Watch Video Solution

13. $\int \sin x \cos x \, dx = \int \sin x \, d(\sin x) = \frac{\sin^2 x}{2} + C_1$ and
 $\int \sin x \cos x \, dx = - \int \cos x \, d(\cos x) = \frac{-\cos^2 x}{2} + C_2,$

where C_1 and C_2 are constants. Explain the double answer of the same integral.

 [View Text Solution](#)

Part I Questions For Practice 4 Mark

1. Evaluate the following integrals :

$$\int \frac{(a^x + b^x)^2}{a^x b^x} dx$$

 [Watch Video Solution](#)

2. Evaluate the following integrals :

$$\int \frac{x^3 - x^2 + x - 1}{x - 1} dx.$$

 [Watch Video Solution](#)

3. Evaluate the following integrals :

$$\int \frac{e^{6 \log x} - e^{5 \log x}}{e^{4 \log x} - e^{3 \log x}} dx.$$

 [Watch Video Solution](#)

4. Evaluate the following integrals :

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

 [Watch Video Solution](#)

5. Evaluate the following integrals :

$$\int \frac{(x^3 + 8)(x - 1)}{x^2 - 2x + 4} dx$$

 [Watch Video Solution](#)

6. If $\frac{dy}{dx} = \cos x + \sec^2 x$ and $x = y = 0$, then find y .

 [Watch Video Solution](#)

7. Verify the following using the concept of integration as an anti - derivative

$$\int \frac{x^3}{x + 1} dx = x - \frac{x^2}{2} + \frac{x^3}{3} - \log|x + 1| + C.$$

 [Watch Video Solution](#)

Part II Question For Practice 1 Mark

1. Evaluate the following integrals :

$$\int (ax + b)^3 dx.$$



[Watch Video Solution](#)

2. Evaluate the following integrals :

$$\int \frac{3ax}{b^2 + c^2x^2} dx$$



[Watch Video Solution](#)

3. Evaluate the following integrals :

$$\int \frac{(\log x)^2}{x} dx.$$



[Watch Video Solution](#)

4. Evaluate the following integrals :

$$\int \frac{\cos^{-1} x}{\sqrt{1-x^2}} dx.$$



[Watch Video Solution](#)

5. Evaluate the following integrals :

$$\frac{(1 + \cos x)}{x + \sin x} dx.$$



[Watch Video Solution](#)

6. Evaluate the following integrals :

$$\int \frac{\sin(2 \tan^{-1} x)}{(1+x^2)} dx.$$



[Watch Video Solution](#)

7. Evaluate the following integrals :

$$\int \frac{\tan^{-1} x}{1 + x^2} dx.$$



[Watch Video Solution](#)

8. Evaluate the following integrals :

$$\int \frac{\cos x + \tan^2 x}{2 \cos x \tan x} dx.$$



[Watch Video Solution](#)

9. Evaluate the following integrals :

$$\int \frac{\cot x}{\ln \sin x} dx.$$



[Watch Video Solution](#)

10. Evaluate the following integrals :

$$\int \frac{\sec x \operatorname{cosec} x}{\ln \tan x} dx.$$

 [Watch Video Solution](#)

11. Evaluate the following integrals :

$$\int \frac{\sin x}{\cos^{11} x} dx$$

 [Watch Video Solution](#)

12. Evaluate the following integrals :

$$\int \cos^3 x e^{\log \sin x} dx.$$

 [Watch Video Solution](#)

13. Evaluate the following integrals :

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

 [Watch Video Solution](#)

14. Evaluate the following integrals :

$$\int \frac{\cos 2x + 2 \sin^2 x}{\cos^2 x} dx$$

 [Watch Video Solution](#)

15. Evaluate the following integrals :

$$\int \cos^{-1}(\sin x) dx.$$

 [Watch Video Solution](#)

16. Evaluate the following integrals :

$$\int \frac{e^x}{\sqrt{9 - e^{2x}}} dx.$$



Watch Video Solution

17. Evaluate the following integrals :

$$\int \frac{dx}{\sqrt{2x - x^2}}$$



Watch Video Solution

Part II Question For Practice 4 Mark

1. Evaluate the following integrals :

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

 [Watch Video Solution](#)

2. Evaluate the following integrals :

$$\int \frac{x^2 - x + 2}{x^2 + 1} dx$$

 [Watch Video Solution](#)

3. Evaluate the following integrals :

$$\int \sqrt{\frac{1+x}{1-x}} dx, x \neq 1.$$

 [Watch Video Solution](#)

4. Evaluate the following integrals :

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

 [Watch Video Solution](#)

5. Evaluate the following integrals :

$$\int \frac{dx}{x^{\frac{1}{2}} + x^{\frac{1}{3}}}$$



[Watch Video Solution](#)

6. Evaluate the following integrals :

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



[Watch Video Solution](#)

7. Evaluate the following integrals :

$$\int \sin^4 x \cos^3 x dx.$$



[Watch Video Solution](#)

8. Evaluate the following integrals :

$$\int \frac{\cos x - \cos 2x}{1 - \cos x} dx$$

 [Watch Video Solution](#)

9. Integrate : $\int \frac{\sin 6x + \sin 4x}{\cos 6x + \cos 4x} dx.$

 [Watch Video Solution](#)

10. Evaluate the following integrals :

$$\int \tan^{-1} \sqrt{\frac{1 - \cos x}{1 + \cos x}} dx.$$

 [Watch Video Solution](#)

11. Evaluate the following integrals :

$$\int \frac{\sin^6 x + \cos^6 x}{\sin^2 x \cdot \cos^2 x} dx.$$

 [Watch Video Solution](#)

12. Evaluate the following integrals :

$$\int \frac{\cos^3 x}{1 + \cos 2x} dx.$$

 [Watch Video Solution](#)

13. Evaluate the following integrals :

$$\int \frac{dx}{x \left[(\log x)^2 + 25 \right]}$$

 [Watch Video Solution](#)

14. Evaluate the following integrals :

$$\int \frac{x + 3}{x^2 - 2x - 5} dx.$$

 [Watch Video Solution](#)

15. Evaluate the following integrals :

$$\int \frac{x}{x^2 + x + 1} dx.$$

 [Watch Video Solution](#)

16. Evaluate the following integrals :

$$\int \frac{6x + 7}{\sqrt{3x^2 + 7x}} dx.$$

 [Watch Video Solution](#)

17. Evaluate the following integrals :

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



[View Text Solution](#)

18. Evaluate the following integrals :

$$\int \frac{\sin x}{\sin 3x} dx.$$



[Watch Video Solution](#)

19. Evaluate the following integrals :

$$\int \frac{dx}{2 \sin^2 x + 5 \cos^2 x} dx.$$



[Watch Video Solution](#)

20. Evaluate the following integrals :

$$\int \frac{1}{1 - \cot x} dx.$$

 [Watch Video Solution](#)

Part II Question For Practice 6 Mark

1. Evaluate the following integrals :

$$\int \cot^{-1} \left[\frac{\sqrt{1 + \cos 2x} + \sqrt{1 - \cos 2x}}{\sqrt{1 + \cos 2x} - \sqrt{1 - \cos 2x}} \right] dx.$$

 [Watch Video Solution](#)

2. Evaluate the following integrals :

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

 [Watch Video Solution](#)

3. Evaluate the following integrals :

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

 [Watch Video Solution](#)

Part iii Questions For Practice 1 Mark

1. Write the value of

$$u \int v dx - \int u' \left\{ \left(\int v dx \right) \right\} dx - v \int u dx \int v' \left\{ \left(\int u dx \right) \right\} dx.$$

 [Watch Video Solution](#)

2. Evaluate the following integrals :

$$\int x \cdot e^x dx.$$



[Watch Video Solution](#)

3. Evaluate the following integrals :

$$\int x \log x dx.$$



[Watch Video Solution](#)

4. Evaluate the following integrals :

$$\int x \sin 2x dx.$$



[Watch Video Solution](#)

5. Evaluate the following integrals :

$$\int (x^2 + 1) \log x dx.$$



Watch Video Solution

6. Evaluate the following integrals :

$$\int e^x \sec x (1 + \tan x) dx.$$



Watch Video Solution

Part iii Questions For Practice 4 Mark

1. Evaluate the following integrals :

$$\int x^2 \sin x dx$$



Watch Video Solution

2. Evaluate the following integrals :

$$\int (\log x)^2 dx.$$



[Watch Video Solution](#)

3. Evaluate the following integrals :

$$\int \tan^{-1} x dx.$$



[Watch Video Solution](#)

4. Evaluate the following integrals :

$$\int \cot^{-1} x dx.$$



[Watch Video Solution](#)

5. Evaluate the following integrals :

$$\int \left[\log(\log x) + \frac{1}{(\log x)^2} \right] dx.$$

 [Watch Video Solution](#)

6. Evaluate the following integrals :

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

 [Watch Video Solution](#)

7. Evaluate the following integrals :

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

 [Watch Video Solution](#)

8. Evaluate the following integrals :

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



Watch Video Solution

9. Evaluate the following integrals :

$$\int \sqrt{5 - 2x + x^2} dx.$$



Watch Video Solution

10. Evaluate the following integrals :

$$\int (\sqrt{x^2 + 6x + 9}) dx$$



Watch Video Solution

11. Evaluate the following integrals :

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



[Watch Video Solution](#)

Part Iii Questions For Practice 6 Mark

1. Evaluate the following integrals :

$$\int x \cos x dx$$



[Watch Video Solution](#)

2. Evaluate the following integrals :

$$\int x^2 dx$$



[Watch Video Solution](#)

3. Evaluate the following integrals :

$$\int e^{3x} \sin 4x dx.$$

 [Watch Video Solution](#)

4. Evaluate the following integrals :

$$\int e^{-3x} \cos^3 x dx.$$

 [View Text Solution](#)

5. Evaluate the following integrals :

$$\int \left(e^{\tan^{-1} x} \right) \left(\frac{1 + x + x^2}{1 + x^2} \right) dx$$

 [Watch Video Solution](#)

Part IV Questions For Practice 4 Mark

1. Evaluate the following integrals :

$$\int \frac{3x}{(x-4)(x+2)} dx.$$

 [Watch Video Solution](#)

2. Evaluate the following integrals :

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

 [Watch Video Solution](#)

3. Evaluate the following integrals :

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

 [Watch Video Solution](#)

4. Evaluate the following integrals :

$$\int \frac{dx}{x(x^3 + 1)}$$



[Watch Video Solution](#)

5. Evaluate the following integrals :

$$\int \frac{x^2}{1 - x^4} dx.$$



[Watch Video Solution](#)

6. Evaluate the following integrals :

$$\int \frac{\sin x}{(1 - \cos x)(2 - \cos x)} dx.$$



[Watch Video Solution](#)

7. Evaluate the following integrals :

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



[Watch Video Solution](#)

8. Evaluate the following integrals :

$$\int \frac{\cos x}{\sin^2 x + \sin x} dx.$$



[Watch Video Solution](#)

9. Evaluate the following integrals :

$$\int (\sin x + \sin 2x) dx.$$



[Watch Video Solution](#)

10. Evaluate the following integrals :

$$\int \frac{(3 \sin \phi - 2) \cos \phi}{5 - \cos^2 \phi - 4 \sin \phi} d\phi$$

 [Watch Video Solution](#)

11. Evaluate the following integrals :

$$\int \frac{dx}{e^{4x} - 5}$$

 [Watch Video Solution](#)

Part IV Questions For Practice 6 Mark

1. Evaluate the following integrals :

$$\int \frac{\cos x}{\sin^2 x + \sin x} dx.$$

 [Watch Video Solution](#)

 [Watch Video Solution](#)

2. Evaluate the following integrals :

$$\int \frac{x^2}{(x^2 + 4)(x^2 + 9)} dx.$$

 [Watch Video Solution](#)

3. Evaluate the following integrals :

$$\int \frac{dx}{(x^2 - 4)}$$

 [Watch Video Solution](#)

4. Evaluate the following integrals :

$$\int \frac{dx}{(x - 2)\sqrt{x^2 - 16x + 64}}$$

 [Watch Video Solution](#)

Part V Questions For Practice 1 Mark

1. Write the value of $\int_0^1 [x] dx$, where $[x]$ stands for fractional part of x .



Watch Video Solution

2. Evaluate the following

$$\int_0^{\pi/4} \tan x dx$$



Watch Video Solution

3. Evaluate the following

$$\int_{\pi/6}^{\pi/4} \cos ecx dx$$



Watch Video Solution

4. Evaluate the following

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



Watch Video Solution

5. Evaluate the following

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



Watch Video Solution

6. Evaluate the following

$$\int_0^3 \frac{dx}{9+x^2}$$

 [Watch Video Solution](#)

7. What is the value of $\int_{-1}^1 \frac{dx}{1+x^2}$?

 [Watch Video Solution](#)

8. If $\int_0^a \frac{1}{4+x^2} dx = \frac{\pi}{8}$, then find the value of a.

 [Watch Video Solution](#)

9. Evaluate the following integrals

$$\int_e^{e^2} \frac{dx}{x \log x}.$$



Watch Video Solution

10. Evaluate the following integrals

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



Watch Video Solution

11. Evaluate the following integrals

$$\int_0^{\pi/2} \cos x e^{\sin x} dx$$



Watch Video Solution

12. Evaluate the following integrals

$$\int_0^1 x e^{x^2} dx.$$



Watch Video Solution

13. Evaluate the following integrals

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



Watch Video Solution

14. Evaluate the following integrals

$$\int_4^9 \frac{\sqrt{x}}{(30 - x^{3/2})^2} dx.$$



Watch Video Solution

15. Evaluate the following integrals

$$\int_0^1 \frac{dx}{e^x + e^{-x}}.$$

 [Watch Video Solution](#)

16. Write the value of $\int_0^{\pi/2} \frac{\sin x}{\sin x + \cos x} dx$

 [Watch Video Solution](#)

17. If $\int_2^3 f(z) dx = 9$, then write the value of

$$\int_2^3 f(\phi(z)) d(\phi(z)).$$

 [Watch Video Solution](#)

18. Evaluate $\int_0^4 [\sqrt{x}] dx$.

 [Watch Video Solution](#)

19. Evaluate $\int_0^7 \left[\frac{x}{3} \right] dx$

 [Watch Video Solution](#)

20. If $\int_1^2 f(x) dx = \lambda$, then what is the value of $\int_1^2 \int(3 - x) dx$?

 [View Text Solution](#)

21. Evaluate $\int_0^a \frac{\sqrt{x}}{\sqrt{x} + \sqrt{a-x}} dx$



Watch Video Solution

22. Evaluate $\int_{-\pi/3}^{\pi/3} \sin^3 x dx$.



Watch Video Solution

23. Write the value of $\int_{-\pi/4}^{\pi/4} \sin^5 x \cos x dx$



Watch Video Solution

24. Prove that $\int_{-1}^1 \log\left(\frac{2-x}{2+x}\right) dx = 0$



Watch Video Solution

25. Prove that $\int_0^{\pi/4} 2 \tan^3 x dx = 1 - \log 2$.

 [Watch Video Solution](#)

Part V Questions For Practice 4 Mark

1. Evaluate the following as limit of sum :

$$\int_{-1}^2 (7x - 5) dx.$$

 [Watch Video Solution](#)

2. Evaluate the following :

$$\int_2^4 (x)^2 dx.$$

 [Watch Video Solution](#)

3. Evaluate the following as limit of sum :

$$\int_1^3 (3x^2 + 1) dx.$$

 [Watch Video Solution](#)

4. Prove that $\int_1^3 \frac{1}{x^2(x+1)} dx = \frac{2}{3} + \log \frac{2}{3}$.

 [Watch Video Solution](#)

5. Evaluate $\int_1^2 \frac{dx}{\sqrt{(x-1)(2-x)}}$.

 [Watch Video Solution](#)

6. Evaluate the following integrals :

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



[Watch Video Solution](#)

7. Evaluate the following integrals :

$$\int_{\pi/3}^{\pi/2} \frac{\sqrt{(1+\cos x)}}{(1-\cos x)^{5/2}} dx.$$



[Watch Video Solution](#)

8. Evaluate the following integrals :

$$\int_0^{\pi/4} \frac{dx}{\cos^3 x \sqrt{2 \sin 2x}}$$



[Watch Video Solution](#)

9. Evaluate the following integrals :

$$\int_0^{1/\sqrt{2}} \frac{\sin^{-1} x}{(1-x^2)^{3/2}} dx.$$

 [Watch Video Solution](#)

10. Evaluate the following integrals :

$$\int (\tan^{-1} x) dx.$$

 [Watch Video Solution](#)

11. Evaluate the following integrals :

$$\int_0^1 x^5 (4-x^2) dx.$$

 [Watch Video Solution](#)

12. Evaluate the following integrals :

$$\int_0^1 x^7 \sqrt{\frac{1+x^2}{1-x^2}} dx, 0 \leq x \leq 1.$$

 [View Text Solution](#)

13. Evaluate the following integrals :

$$\int_0^a x^2(a^2 - x^2) dx$$

 [Watch Video Solution](#)

14. If f is an even function and $\int_{-2}^0 f(t) dt = \frac{3}{2}$, then find

$$\int_{-2}^2 f(x) dx.$$

 [Watch Video Solution](#)

15. $\int_0^2 (x - [x]) dx$, where $[x]$ is the greatest integer of x .



[Watch Video Solution](#)

16. Evaluate the following integrals :

$$\int_{-1}^2 \{|x| + [x]\} dx$$



[Watch Video Solution](#)

17. Evaluate the following integrals :

$$\int_0^1 2x(1 - x)^n dx.$$



[Watch Video Solution](#)

18. Evaluate the following integrals :

$$\int_0^2 x\sqrt{2-x} dx.$$

 [Watch Video Solution](#)

19. Evaluate the following integrals :

$$\int_0^{\pi/2} \frac{\tan^7 x}{\cot^7 x + \tan^7 x} dx.$$

 [Watch Video Solution](#)

20. Evaluate the following integrals :

$$\int_0^{\pi/2} \frac{dx}{1 + \sqrt{\tan x}}$$

 [Watch Video Solution](#)

21. Evaluate the following integrals :

$$\int_0^{\pi/2} \log \left| \frac{4 + 3 \sin x}{4 + 3 \cos x} \right| dx.$$

 [Watch Video Solution](#)

22. Evaluate the following integrals :

$$\int_0^1 \log \left| \frac{1}{x} - 1 \right| dx.$$

 [Watch Video Solution](#)

23. Evaluate the following integrals :

$$\int_0^{\pi/2} \frac{\sin x - \cos x}{1 + \sin x \cos x} dx.$$

 [Watch Video Solution](#)

24. Evaluate the following integrals :

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

 [Watch Video Solution](#)

25. Evaluate the following integrals :

$$\int_0^1 \cot^{-1} \{1 - x + x^2\} dx.$$

 [Watch Video Solution](#)

26. Show that $\int_0^{\pi} \log |\tan x| dx = 0$.

 [Watch Video Solution](#)

1. Evaluate $\int_1^3 (2x^2 + 5x) dx$.

 [Watch Video Solution](#)

2. Evaluate $\int_1^3 (x^2 + 1) dx$.

 [Watch Video Solution](#)

3. Evaluate the following integrals :

$$\int_0^{\pi/4} \frac{\sin x + \cos x}{9 + 16 \sin 2x} dx.$$

 [Watch Video Solution](#)

4. Evaluate the following integrals :

$$\int_0^{\pi/2} \sin 2x \tan^{-1}(\sin x) dx.$$



[Watch Video Solution](#)

5. Evaluate the following integrals :

$$\int_{-1}^2 |x^3 - x| dx.$$



[Watch Video Solution](#)

6. Evaluate the following integrals :

$$\int_{-1}^1 (x^3 + 1) dx.$$



[Watch Video Solution](#)

7. Evaluate the following integrals :

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

 [Watch Video Solution](#)

8. Evaluate the following integrals :

$$\int_0^{\pi} 2 \sin x dx.$$

 [Watch Video Solution](#)

Chapter Practice 1 Mark

1. Evaluate $\int (4e^{3x} - 2) dx$

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

4. Evaluate $\int\sec x^\circ \tan x^\circ dx$.

 [Watch Video Solution](#)

5. Evaluate $\int\sec^2(7-4x)dx$.

 [Watch Video Solution](#)

6. Evaluate $\int \frac{\log x}{2x} dx$.

 [Watch Video Solution](#)

7. Evaluate $\int \frac{\sec^2(\log x)}{x} dx$.

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

9. Evaluate $\int \sqrt{\tan x} (1 + \tan^2 x) dx$.

 [Watch Video Solution](#)

 Watch Video Solution

10. Evaluate $\int f'(ax + b)[f(ax + b)]^n dx$.

 Watch Video Solution

11. Evaluate $\int \frac{\cos \sqrt{x}}{\sqrt{x}} dx$.

 Watch Video Solution

12. Evaluate $\int \frac{e^{2x} - e^{-2x}}{e^{2x} + e^{-2x}} dx$.

 Watch Video Solution

13. Evaluate $\int e^{3 \log x} (x^4 + 1)^{-1} dx$.



[Watch Video Solution](#)

14. Evaluate $\int \frac{\sin^6 x}{\cos^8 x} dx$.



[Watch Video Solution](#)

15. Evaluate $\int \sqrt{1 + \sin x} dx$.



[Watch Video Solution](#)

16. Evaluate $\int \frac{\sec^2 x}{\operatorname{cosec}^2 x} dx$.



[Watch Video Solution](#)

17. Evaluate $\int \frac{2}{1 + \cos 2x} dx$.

 [Watch Video Solution](#)

18. Evaluate $\int (\sec x + \operatorname{cosec} x) dx$.

 [Watch Video Solution](#)

19. Evaluate $\int \frac{dx}{x^2 + 16}$.

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

21. Evaluate $\int (\operatorname{cosec}^2 x - \cot x) e^x dx$.



Watch Video Solution

22. Evaluate $\int_1^{\sqrt{3}} \frac{dx}{1+x^2}$



Watch Video Solution

23. Evaluate $\int_0^1 \frac{dx}{4-x^2}$



Watch Video Solution

24. Evaluate $\int_0^{\pi/2} \sqrt{1+\cos 2x} dx$.



 [Watch Video Solution](#)

25. Evaluate $\int_0^2 \sqrt{4-x^2} dx$.

 [Watch Video Solution](#)

26. Evaluate $\int_{-1}^1 \sin^5 x \cos^4 x dx$.

 [Watch Video Solution](#)

Chapter Practice 4 Mark

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

 [Watch Video Solution](#)

2. Evaluate $\int \frac{\cos x}{\left(\cos \frac{x}{2} + \sin \frac{x}{2}\right)} dx.$

 [Watch Video Solution](#)

3. Evaluate $\int \tan^8 x \sec^4 x dx.$

 [Watch Video Solution](#)

4. Evaluate $\int \frac{\sin(x - a)}{\sin(x + a)} dx.$

 [Watch Video Solution](#)

5. Evaluate $\int \sin^4 x dx.$



 [Watch Video Solution](#)

6. Evaluate $\int \sec^3 x dx$.

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

10. Evaluate $\int (5x - 2) dx$

 [Watch Video Solution](#)

11. Evaluate $\int \frac{x + 2}{\sqrt{x^2 + 2x + 3}} dx.$

 [Watch Video Solution](#)

12. Evaluate $\int \frac{x + 2}{\sqrt{4x - x^2}} dx.$

 [Watch Video Solution](#)

13. Evaluate $\int \frac{dx}{\sin x + \sqrt{3} \cos x}$.

 [Watch Video Solution](#)

14. Evaluate $\int \frac{\sin^{-1} x}{x^2} dx$.

 [Watch Video Solution](#)

15. Evaluate $\int \frac{x}{\sqrt{x+4}} dx$

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

17. Evaluate $\int e^x \left(\frac{1 + \sin x}{1 + \cos x} \right) dx.$

 [Watch Video Solution](#)

18. Evaluate $\int (\sin(\log x) + \cos(\log x)) dx.$

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

21. Evaluate $\int (x^2 + x + 1) dx$.

 [Watch Video Solution](#)

22. Evaluate $\int \frac{5x}{(x + 1)(x^2 + 9)} dx$

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

25. Evaluate $\int \frac{dx}{x(x^5 + 3)}$.

 [Watch Video Solution](#)

26. Evaluate $\int \frac{x^2}{(x^2 + a^2)(x^2 + b^2)} dx$

 [Watch Video Solution](#)

27. Evaluate $\int \frac{x^2 + 1}{(x^2 + 4)(x^2 + 25)} dx$.



Watch Video Solution

28. Evaluate $\int \frac{x^2}{x^4 - x^2 - 12} dx.$



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

31. Evaluate $\int_0^2 e^x dx$ as limit of sums

 [Watch Video Solution](#)

32. Evaluate $\int_0^1 \left(\frac{1-x}{1+x} \right) dx$

 [Watch Video Solution](#)

33. Evaluate $\int_1^{\sqrt{2}} \frac{dx}{x\sqrt{x^2-1}}$

 [Watch Video Solution](#)

34. Evaluate $\int_0^4 (|x| + |x-2| + |x-4|) dx$.

 [Watch Video Solution](#)

35. Evaluate $\int_0^{\pi/2} \frac{\cos^5 x}{\sin^5 x + \cos^5 x} dx.$

 [Watch Video Solution](#)

36. Evaluate $\int_0^{\pi} x \sin x \cos^2 x dx.$

 [Watch Video Solution](#)

37. Evaluate $\int_0^{\pi/2} \frac{1 - \cos 2x}{1 + \cos 2x} dx.$

 [Watch Video Solution](#)

38. Evaluate $\int_0^{\pi} a^2 \cos^2 x dx.$



Watch Video Solution

39. Evaluate $\int_0^{\pi/2} \log \sin x dx$.



Watch Video Solution

40. Evaluate $\int_0^{\pi/2} |\cos x - \sin x| dx$.



Watch Video Solution

41. Evaluate $\int_{-\pi/2}^{\pi/2} |\sin x| dx$.



Watch Video Solution

42. Evaluate $\int_{-\pi/4}^{\pi/4} \log(\cos x + \sin x) dx$.

 [Watch Video Solution](#)

Chapter Practice 6 Mark

1. Evaluate $\int \frac{3x + 5}{x^3 - x^2 - x + 1} dx$.

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

3. Evaluate $\int_0^3 (2x^2 + e^x) dx$.



[Watch Video Solution](#)

4. Evaluate $\int_{-1}^{3/2} |x \sin(\pi x)| dx$.



[Watch Video Solution](#)