



MATHS

JEE (MAIN AND ADVANCED) MATHEMATICS

INDEFINITE INTEGRALS

SOLVED EXAMPLES

1. Find $\int (1 - x)(4 - 3x)(3 + 2x)dx, x \in R.$

[Watch Video Solution](#)

2. Evaluate $\int \left(\frac{x^6 - 1}{1 + x^2} \right) dx$ for $x \neq R.$

[Watch Video Solution](#)

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



Watch Video Solution

4. $\int \sec^2 x \operatorname{cosec}^2 x dx =$



Watch Video Solution

5. Evaluate $\int (a \tan x - b \cot x)^2 dx$



Watch Video Solution

6. Evaluate $\int \frac{\cos 2x - \cos 2\alpha}{\cos x - \cos \alpha} dx$



Watch Video Solution

7. Evaluate $\int \sqrt{1 + \sin 2x} \, dx \, (x \in \mathbb{R})$.



Watch Video Solution

8. Evaluate $\int \frac{x^2}{\sqrt{1+x^2}(\sqrt{1+x^2}-1)} \, dx \, (x \neq 0)$



Watch Video Solution

9. Evaluate the integrals.

$$\int 2x \sin(x^2 + 1) dx, x \in \mathbb{R}.$$



Watch Video Solution

10. Evaluate

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

[Watch Video Solution](#)

11. Evaluate $\int \frac{x^5}{1+x^{1/2}} dx$ on $\mathbb{R}$.

[Watch Video Solution](#)

12. Evaluate

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

[View Text Solution](#)

13. Evaluate $\int \frac{\sin^4 x}{\cos^6 x} dx$,

$$x \in I \subset \mathbb{R} \setminus \left\{ \frac{(2n+1)\pi}{2} : n \in \mathbb{Z} \right\}.$$

[Watch Video Solution](#)

14. Evaluate

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



Watch Video Solution

15. $\int \frac{1}{\sqrt{x}} \cos(\sqrt{x}) dx =$



Watch Video Solution

16. $\int \frac{1}{\sqrt{4-9x^2}} dx =$



Watch Video Solution

17. $\int \frac{1}{\sqrt{9x^2-25}} dx =$



Watch Video Solution

18. Evaluate

$$\int \frac{1}{\sqrt{3x^2 - 5}} dx$$



Watch Video Solution

19. Evaluate $\int \sqrt{9 - 4x^2} dx$



Watch Video Solution

20. Evaluate the integrals.

$$\int \frac{1}{x \log x [\log(\log x)]} dx \text{ on } (1, \infty)$$



Watch Video Solution

21. $\int \sec x \log(\sec x + \tan x) dx =$

[Watch Video Solution](#)

22. Evaluate the integrals.

$$\int \frac{x^2}{(a + bx)^2} dx, x \in I \subset \mathbb{R} \setminus \left\{ -\frac{a}{b} \right\}, \text{ where } a, b, \text{ are real numbers, } b \neq 0.$$

[Watch Video Solution](#)

23. $\int \cos^4 x dx =$

[Watch Video Solution](#)

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

[Watch Video Solution](#)

25. Find $\int \frac{2x^2 - 5x + 1}{x^2(x^2 - 1)} dx$.



Watch Video Solution

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



Watch Video Solution

27. Evaluate $\int \frac{1}{4x + 3x - 2x^2} dx$



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

30. Evaluate $\int \frac{1}{\sqrt{x^2 - 4x - 12}} dx.$



Watch Video Solution

31. Evaluate $\int \sqrt{1 - x - x^2} dx$



Watch Video Solution

32. Evaluate $\int \frac{2x + 5}{\sqrt{x^2 - 2x + 10}} dx.$



Watch Video Solution

33. Evaluate the integrals.

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

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

35. Evaluate $\int \frac{1}{(2x+3)\sqrt{4x+5}} dx$

 [Watch Video Solution](#)

36. Evaluate $\int x\sqrt{4x+3} dx$.

 [View Text Solution](#)

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



Watch Video Solution

38. Evaluate the integrals.

$$\int \frac{dx}{5 + 4\cos 2x}.$$



Watch Video Solution

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



Watch Video Solution

40. Evaluate the integrals.

$$\int \frac{2\cos x + 3\sin x}{4\cos x + 5\sin x} dx$$



Watch Video Solution

41. Evaluate $\int x \sin x \, dx$



Watch Video Solution

42. Evaluate $\int \sin(\sqrt{x}) \, dx$



Watch Video Solution

43. Evaluate $\int x \cot^2 x \, dx$



Watch Video Solution

44. Evaluate $\int x \sin^2 x \, dx$



Watch Video Solution

45. $\int \sec x \log(\sec x + \tan x) dx =$



Watch Video Solution

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

on $I \subset \mathbb{R} \setminus \{2n\pi : n \in \mathbb{Z}\}$.



Watch Video Solution

47. Evaluate the integrals.

$$\int e^x \left(\tan^{-1} x + \frac{1}{1+x^2} \right) dx, x \in \mathbb{R}.$$



Watch Video Solution

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

[Watch Video Solution](#)

49. Show that

$$\int \left[\frac{1 + nx^{n-1} - x^{2n}}{(1 - x^n)\sqrt{1 - x^{2n}}} \right] e^x dx = e^x \sqrt{\frac{1 + x^n}{1 - x^n}} + c$$

[View Text Solution](#)

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

[Watch Video Solution](#)

51. Evaluate $\int e^{-2x} [2 \tan x - \sec^2 x] dx$

[Watch Video Solution](#)

52. Evaluate the integrals.

$\int x^n \log x dx$ on $(0, \infty)$, n is a real number and $n \neq -1$.

 [Watch Video Solution](#)

53. Evaluate $\int x \sin^{-1} x dx$ on $(-1, 1)$.

 [Watch Video Solution](#)

54. Evaluate $\int x \sec^{-1} x dx$

 [Watch Video Solution](#)

55. Evaluate $\int \sec^{-1} \sqrt{x} dx$

 [View Text Solution](#)

56. Evaluate $\int x^2 \cos^{-1} x \, dx$



Watch Video Solution

57. Evaluate $\int x^2 \tan^{-1} x \, dx$



Watch Video Solution

58. Evaluate $\int x \cosh^{-1} x \, dx$



View Text Solution

59. Evaluate the integrals.

$$\int \tan^{-1} \left(\frac{3x - x^3}{1 - 3x^2} \right) dx \text{ on } I \subset \mathbb{R} \setminus$$

$$\left\{ -\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}} \right\}.$$

[Watch Video Solution](#)

60. Evaluate the integral

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

[Watch Video Solution](#)

61. Evaluate $\int e^x \sin 3x \cos 3x \, dx$

[View Text Solution](#)

62. Evaluate $\int x^3 \sin x \, dx$

[Watch Video Solution](#)

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

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

3. Evaluate $\int \frac{1}{x l(x) l^2(x) \dots l^n(x)} dx$

where $l^n(x) = \log_e \log_e \dots \log_e(x)$ (n times)

 [Watch Video Solution](#)

EXERCISE - 1.1(VERY SHORT ANSWER QUESTIONS)

1. Evaluate the integrals.

(i) $\int 2x^7 \, dx$



Watch Video Solution

2. Evaluate the integrals.

$\int 2x\sqrt{x} \, dx$



Watch Video Solution

3. Evaluate the integrals.

$\int \sqrt[3]{2x^2} \, dx$ on $(0, \infty)$.



Watch Video Solution

4. Evaluate the integrals.

$$\int \left(x + \frac{1}{x} \right)^3 dx (x > 0)$$



Watch Video Solution

5. Evaluate the integrals.

$$\int 3^{-\log_9 x^2} dx$$



Watch Video Solution

6. Evaluate the integrals.

$$\int (x^3 - 2x^2 + 3) dx \text{ on } R.$$



Watch Video Solution

7. Evaluate the integrals.

$$\int \left(\frac{3}{x} - \frac{2}{x} + \frac{1}{3x^2} \right) dx \text{ on } (0, \infty)$$



Watch Video Solution

8. Evaluate the integrals.

$$\int \frac{x^2 + 3x - 1}{2x} dx, x \in I \subset \mathbb{R} \setminus \{0\}$$



Watch Video Solution

9. Find the values of the following integrals

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



Watch Video Solution

10. Evaluate the integrals.

$$\int \frac{1 - \sqrt{x}}{x} dx$$



Watch Video Solution

11. Evaluate the integrals.

$$\int \left(1 + \frac{2}{3} - \frac{3}{x^2} \right) dx \text{ on } I \subset \mathbb{R} \setminus \{0\}$$



Watch Video Solution

12. Evaluate the integrals.

$$\int \left(1 - x^2 \right)^3 dx, |x| < 1$$



Watch Video Solution

13. Evaluate the integrals.

$$\int \left(\frac{\sqrt{x} + 1}{x} \right)^2 dx \text{ on } (0, \infty)$$



Watch Video Solution

14. Evaluate the integrals.

$$\int \frac{(3x + 1)^2}{2x} dx, x \in I \subset \mathbb{R} \setminus \{0\}$$



Watch Video Solution

15. Evaluate the integrals.

$$\int \left[\frac{2x - 1}{3\sqrt{x}} \right]^2 dx, (x > 0)$$



Watch Video Solution

16. Evaluate the following integrals

$$\int e^{-1 \log(\operatorname{cosec} x)} dx$$



Watch Video Solution

17. $\int \cot^2 x dx =$



Watch Video Solution

18. Evaluate the following integrals

$$\int (\tan^2 x + 1) dx$$



Watch Video Solution

19. Evaluate the following integrals

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

[Watch Video Solution](#)

20. Evaluate the following integrals

$$\int e^{\log(1 + \tan^2 x)} dx$$

[Watch Video Solution](#)

21. Evaluate the following integrals

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

[Watch Video Solution](#)

22. Evaluate the following integrals

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

[Watch Video Solution](#)

23. Evaluate the following integrals

$$\int \sqrt{1 - \cos 2x} \, dx \quad x \in [0, \pi]$$



Watch Video Solution

24. Evaluate the following integrals

$$\int \frac{1}{1 + \cos x} dx$$



Watch Video Solution

25. Evaluate the following integrals

$$\int \frac{1}{1 + \sin x} dx$$



Watch Video Solution

26. Evaluate the following integrals

$$\int \frac{\sin x}{1 + \sin x} dx$$



Watch Video Solution

27. Evaluate the following integrals

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



Watch Video Solution

28. Evaluate the following integrals

$$\int \frac{\operatorname{cosec} x}{\operatorname{cosec} x - \cot x} dx$$



Watch Video Solution

29. Evaluate the integrals.

$$\int \sqrt{1 - \sin 2x} dx \text{ on}$$

$$I \subset \left\{ 2n\pi - \frac{3\pi}{4}, 2n\pi + \frac{\pi}{4} \right\}, n \in \mathbb{Z}.$$



Watch Video Solution

30. Evaluate the following integrals

$$\int \sqrt{1 + \sin 2x} dx, x \in \left[-\frac{\pi}{2}, \frac{\pi}{2} \right]$$



Watch Video Solution

$$31. \int \frac{1 + \sin^2 x}{1 + \cos 2x} dx =$$



Watch Video Solution

32. Evaluate the following integrals

$$\int \left(x + \frac{4}{1+x^2} \right) dx$$



Watch Video Solution

33. Evaluate the integrals.

$$\int \left(e^x - \frac{1}{x} + \frac{2}{\sqrt{x^2+1}} \right) dx \text{ on } I \subset \mathbb{R} \setminus [-1, 1]$$



Watch Video Solution

34. Evaluate the integrals.

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



Watch Video Solution

35. Evaluate the following integrals

$$\int \left(\frac{1}{\sqrt{1-x^2}} + \frac{1}{\sqrt{1+x^2}} \right) dx, |x| < 1$$

 **Watch Video Solution**

36. Evaluate the integrals.

$$\int \left(\frac{1}{\sqrt{x}} + \frac{2}{\sqrt{x^2-1}} - \frac{3}{2x^2} \right) dx \text{ on } (1, \infty).$$

 **Watch Video Solution**

37. Evaluate the following integrals

$$\int (\sec^2 x - \cos x + x^2) dx$$

 **Watch Video Solution**

38. Evaluate the following integrals

$$\int \left(\sec x \cdot \tan x + \frac{3}{x} - 4 \right) dx$$



Watch Video Solution

39. Evaluate the integrals.

$$\int \left(x^3 - \cos x + \frac{4}{\sqrt{x^2 + 1}} \right) dx, x \in \mathbb{R}.$$



Watch Video Solution

40. Evaluate the following integrals

$$\int \left(\sinh x + \frac{1}{\sqrt{x^2 - 1}} \right) dx, |x| > 1$$



Watch Video Solution

41. Evaluate the integrals.

$$\int \left(\cosh x + \frac{1}{\sqrt{x^2 + 1}} \right) dx, x \in \mathbb{R}$$



Watch Video Solution

42. Evaluate the following integrals

$$\int \frac{1}{\cosh x + \sinh x} dx$$



Watch Video Solution

43. Evaluate the following integrals

$$\int (2x - 3\cos x + e^x) dx$$



Watch Video Solution

44. Evaluate the following integrals

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

 [Watch Video Solution](#)

45. Evaluate the following integrals

$$\int \left(\frac{1}{\sqrt{1-x^2}} + \frac{2}{\sqrt{1+x^2}} \right) dx, |x| < 1$$

 [Watch Video Solution](#)

EXERCISE - 1.2(VERY SHORT ANSWER QUESTIONS)

1. Evaluate the following integrals

$$\int e^{2x} dx$$

 [Watch Video Solution](#)

2. Evaluate the integrals.

$$\int \frac{1}{7x+3} dx \text{ on } I \subset \mathbb{R} \setminus \left\{ -\frac{3}{7} \right\}.$$



Watch Video Solution

3. Evaluate the following integrals

$$\int \frac{1}{\sqrt{1+5x}} dx$$



Watch Video Solution

4. Evaluate the following integrals

$$\int (\sqrt{3x-2}) dx$$



Watch Video Solution

5. Evaluate the integrals.

$$\int \frac{e^{\log x}}{x} dx \text{ on } (0, \infty).$$



Watch Video Solution

6. Evaluate the following integrals

$$\int \sin^7 x \, dx$$



Watch Video Solution

7. Evaluate the following integrals

$$\int \frac{6x}{3x^2 - 2} \, dx$$



Watch Video Solution

8. Evaluate the integrals.

$$\int \frac{2x + 1}{x^2 + x + 1} dx \text{ on } \mathbb{R}.$$



Watch Video Solution

9. Evaluate the following integrals

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



Watch Video Solution

10. Evaluate the following integrals

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



Watch Video Solution

11. Evaluate the following integrals

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



Watch Video Solution

12. $\int \frac{1 - \tan x}{1 + \tan x} dx =$



Watch Video Solution

13. Evaluate the integrals.

$$\int (3x^2 - 4) \times dx \text{ on } R.$$



Watch Video Solution

14. Evaluate the following integrals

$$\int (1 - 2x^3)x^2 dx$$



Watch Video Solution

15. Evaluate the following integrals.

$$\int \frac{ax^{n-1}}{bx^n + c} dx$$

[Watch Video Solution](#)

16. Evaluate the following integrals

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

[Watch Video Solution](#)

17. Evaluate the integrals.

$$\int \frac{\sin(\log x)}{x} dx \text{ on } (-1, \infty)$$

[Watch Video Solution](#)

18. Evaluate the integrals.

$$\int \frac{\cos(\log x)}{x} dx \text{ on } (0, \infty).$$

[Watch Video Solution](#)

19. Evaluate the integrals.

$$\int \frac{1}{x \log x} dx \text{ on } (-1, \infty)$$



Watch Video Solution

20. Evaluate the following integrals

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



Watch Video Solution

21. Evaluate the following integrals

$$\int \frac{\cot(\log x)}{x} dx$$



Watch Video Solution

22. Evaluate the integrals.

$$\int e^x \sin x \, dx \text{ on } \mathbb{R}.$$



Watch Video Solution

23. Evaluate the following integrals

$$\int e^x \cot e^x \, dx$$



Watch Video Solution

24. Evaluate the integrals.

$$\int x^3 \sin x^4 \, dx \text{ on } \mathbb{R}.$$



Watch Video Solution

25. Evaluate the following integrals

$$\int 2x \cos(x^2 + 1) \, dx$$



Watch Video Solution

26. Evaluate the integrals.

$$\int \frac{e^{\tan^{-1}x}}{1+x^2} dx \text{ on } I \subset (0, \infty).$$



Watch Video Solution

27. Evaluate the following integrals

$$\int 2xe^{x^2} \, dx$$



Watch Video Solution

28. Evaluate the following integrals

$$\int \sec (\tan x) \sec ^2 x \, dx$$

 [Watch Video Solution](#)

29. Evaluate the integrals.

$$\int \sqrt{\sin x \cos x} dx \text{ on } [2n\pi, (2n+1)\pi],$$

 [Watch Video Solution](#)

30. Evaluate the integrals.

$$\int \operatorname{cosec}^2 x \sqrt{\cot x} dx \text{ on } \left(0, \frac{\pi}{2}\right]$$

 [Watch Video Solution](#)

31. Evaluate $\int \cos^3 x \sin x \, dx$ on R .

[Watch Video Solution](#)

32. Evaluate the integrals.

$$\int \sqrt{3 \sin x \cos x} dx \text{ on } [2n\pi, (2n+1)\pi], (n \in \mathbb{Z}).$$

[Watch Video Solution](#)

33. Evaluate the following integrals

$$\int \sin^2 x \, dx \text{ on } \mathbb{R}$$

[Watch Video Solution](#)

34. Evaluate the following integrals

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

[Watch Video Solution](#)

35. Evaluate the integrals.

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



Watch Video Solution

36. Evaluate the following integrals

$$\int \frac{\sec^2 x}{(1 + \tan x)^3} dx$$



Watch Video Solution

37. Evaluate the integrals.

$$\int \frac{\log(1+x)}{1+x} dx \text{ on } (-1, \infty).$$



Watch Video Solution

38. Evaluate $\int \frac{1}{\sqrt{\sin^{-1}x} \sqrt{1-x^2}} dx$ on $I = (0, 1)$.



Watch Video Solution

39. $\int \frac{x^2}{\sqrt{1-x^6}} dx$ on $I = (-1, 1)$.



Watch Video Solution

40. Evaluate the integrals.

$$\int \frac{\operatorname{cosec}^2 x}{(a + b \cot x)^5} dx \text{ on } I \subset \mathbb{R} \setminus$$

$\{x \in \mathbb{R} : a + b \cot x = 0\}$, where $a, b \in \mathbb{R}, b \neq 0$.



Watch Video Solution

41. Evaluate the following integrals

$$\int \frac{\sin \theta}{\sqrt{2 - \cos^2 \theta}} d\theta$$



Watch Video Solution

42. Evaluate $\int \frac{1}{1 + 4x^2} dx$ on R .



Watch Video Solution

43. Evaluate the integrals.

$$\int \frac{1}{8 + 2x^2} dx \text{ on } R.$$



Watch Video Solution

44. $\int \frac{x^3}{1 + x^4} dx =$



[Watch Video Solution](#)

45. Evaluate the integrals.

$$\int \frac{1}{\sqrt{1-4x^2}} dx \text{ on } \left(-\frac{1}{2}, \frac{1}{2}\right).$$

[Watch Video Solution](#)

46. Evaluate the integrals.

$$\int \frac{3x^2}{1+x^6} dx, \text{ on } \mathbb{R}.$$

[Watch Video Solution](#)

47. Evaluate the following integrals

$$\int \frac{2x^3}{1+x^8} dx$$

[Watch Video Solution](#)

48. $\int \frac{x^8}{1+x^{18}} dx$ on $\mathbb{R}$.



Watch Video Solution

49. Evaluate the following integrals

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



Watch Video Solution

50. Evaluate the integrals.

$$\int \frac{dx}{\sqrt{a^2 - (b + cx)^2}} \text{ on } \{x \in \mathbb{R} : |b + cx| < a\}.$$

where a, b, c are real numbers $c \neq 0$ and $a > 0$.



Watch Video Solution

51. Evaluate the integrals.

$$\int \frac{dx}{a^2 + (b + cx)^2} \text{ on } \mathbb{R}, \text{ where } a, b, c \text{ are real numbers, } c \neq 0 \text{ and } a > 0.$$



Watch Video Solution

52. Evaluate the following integrals

$$\int \sqrt{16 - 25x^2} \, dx$$



Watch Video Solution

53. Evaluate the following integrals

$$\int \sqrt{4x^2 + 9} \, dx$$



Watch Video Solution

54. $\int \frac{1}{\sqrt{9x^2 - 25}} dx =$



Watch Video Solution

55. Evaluate the integrals.

$$\int \frac{dx}{\sqrt{25 + x^2}} \text{ on } \mathbb{R}.$$



Watch Video Solution

56. Evaluate the integrals.

$$\int \frac{dx}{(x^2 + a^2)^2}, (a > 0) \text{ on } \mathbb{R}.$$



Watch Video Solution

57. Find $\int \frac{dx}{x^2 - 81}.$



Watch Video Solution

EXERCISE - 1.2(SHORT ANSWER QUESTIONS)

1. Evaluate the following integrals

$$\int \frac{x^2}{\sqrt{1-x^2}} dx \text{ on } (-1,1)$$



Watch Video Solution

2. Evaluate the following integrals

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



Watch Video Solution

$$3. \int \frac{(1+x)e^x}{\cos^2(xe^x)} dx =$$



Watch Video Solution

4. Evaluate the following integrals

$$\int \frac{x}{\sqrt{1-x}} dx, x \in I = (0,1)$$



Watch Video Solution

5. Evaluate the following integrals

$$\int \frac{x^2}{\sqrt{1-x^2}} dx \text{ on } (-1,1)$$



Watch Video Solution

6. Evaluate the following integrals

$$\int \tan^4 x \sec^2 x dx$$



Watch Video Solution

7. Evaluate the following integrals

$$\int \frac{\sec x}{(\sec x + \tan x)^n} dx$$

 **Watch Video Solution**

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

 **Watch Video Solution**

9. Evaluate the following integrals

$$\int \frac{1}{1 + \sin 2x} dx$$

 **Watch Video Solution**

10. $\int \frac{1}{\sin(x - a)\sin(x - b)} dx =$

 **Watch Video Solution**

11. Evaluate the following integrals

$$\int \frac{1}{\cos(x-a)\cos(x-b)} dx$$



Watch Video Solution

12. Evaluate the following integrals

$$\int \frac{\sin x}{\sin(a+x)} dx$$



Watch Video Solution

13. $\int \frac{\cot x}{\log(\sin x)} dx =$



Watch Video Solution

14. Evaluate the following integrals

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



Watch Video Solution

15. Evaluate the following integrals

$$\int \operatorname{cosec}^2 x \sin 2x dx$$



Watch Video Solution

16. Evaluate the following integrals

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



Watch Video Solution

17. Evaluate the following integrals

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

 [Watch Video Solution](#)

18. Evaluate the integrals.

$$\int \frac{dx}{a^2 \sin^2 x + b^2 \cos^2 x} \text{ on } \mathbb{R}, a \neq 0, b \neq 0.$$

 [Watch Video Solution](#)

19. Evaluate the integrals.

$$\int x \sqrt{4x + 3} dx \text{ on } \left(-\frac{3}{4}, \infty \right).$$

 [Watch Video Solution](#)

20. Evaluate the following integrals

$$\int \cos x \cos 2x \, dx$$

 [Watch Video Solution](#)

21. Evaluate the following integrals

$$\int \cos x \cos 3x \, dx$$

 [Watch Video Solution](#)

22. $\int \cos x \cos 2x \cos 3x \, dx =$

 [Watch Video Solution](#)

23. Evaluate the integrals.

$$\int \sin x \sin 2x \sin 3x \, dx \text{ on } \mathbb{R}.$$



[Watch Video Solution](#)

24. Evaluate the integrals.

$$\int \sin^3 x dx \text{ on } R.$$

[Watch Video Solution](#)

25. Evaluate the following integrals

$$\int \cos^3 x \, dx$$

[Watch Video Solution](#)

26. Evaluate the following integrals

$$\int \sin^3 2x \, dx$$

[Watch Video Solution](#)

27. Evaluate the integrals.

$\int \sin^m x \cos^n x dx$ on $\mathbb{R}$, $m \neq n$, m and n are positive integers.

 [Watch Video Solution](#)

28. Evaluate the integrals.

$\int \sin^m x \sin^n x dx$ on $\mathbb{R}$, $m \neq n$, m and n are positive integers.

 [Watch Video Solution](#)

29. Evaluate the integrals.

$\int \cos^m x \cos^n x dx$ on $\mathbb{R}$, $m \neq n$, m and n are positive integers.

 [Watch Video Solution](#)

1. Evaluate the following integrals

$$\int \frac{x - 1}{(x - 2)(x - 3)} dx$$



Watch Video Solution

2. Evaluate the following integrals

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



Watch Video Solution

3. Evaluate the following integrals

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



Watch Video Solution

4. Evaluate the following integrals

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



Watch Video Solution

5. Evaluate the following integrals

$$\int \frac{dx}{6x^2 - 5x + 1}$$



Watch Video Solution

6. Evaluate the integrals.

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



Watch Video Solution

7. Evaluate the following integrals

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



Watch Video Solution

8. Evaluate the following integrals

$$\int \frac{1}{(x - a)(x - b)(x - c)} dx$$



Watch Video Solution

$$9. \int \frac{1}{(x^2 + a^2)(x^2 + b^2)} dx =$$



Watch Video Solution

10. Evaluate the integrals.

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

 **Watch Video Solution**

11. Evaluate the following integrals

$$\int \frac{7x-4}{(x-1)^2(x+2)} dx$$

 **Watch Video Solution**

12. Evaluate the following integrals

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

 **Watch Video Solution**

13. Evaluate the following integrals

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



Watch Video Solution

14. Evaluate the following integrals

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



Watch Video Solution

15. Evaluate the following integrals

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



Watch Video Solution

16. Evaluate the following integrals

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

 [Watch Video Solution](#)

17. Find $\int \frac{2x^2 - 5x + 1}{x^2(x^2 - 1)} dx.$

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

19. Evaluate the following integral

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

[View Text Solution](#)

20. Evaluate the integrals.

$$\int \frac{dx}{e^x + e^{2x}}$$

[Watch Video Solution](#)

21. Evaluate the following integrals

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

[Watch Video Solution](#)

22. Evaluate the following integrals

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

[Watch Video Solution](#)

23. Evaluate the integrals.

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

 **Watch Video Solution**

24. Evaluate the following integrals

$$\int \frac{\cos x}{\sin^2 x + 4 \sin x + 5} dx$$

 **Watch Video Solution**

25. Evaluate the following integrals

$$\int \sqrt{e^x - 4} dx \text{ on } [\log_e^4, \infty)$$

 **Watch Video Solution**

26. Evaluate the following integrals

$$\int \sqrt{1 + \sec x} \, dx \text{ on } \left(\left(2n - \frac{1}{2} \right) \pi, \left(2n + \frac{1}{2} \right) \pi, (n \in \mathbb{Z}) \right)$$



Watch Video Solution

EXERCISE - 1.4 (LONG ANSWER QUESTIONS)

1. Evaluate the following integrals

$$\int \frac{1}{x^2 + 2x + 5} \, dx$$



Watch Video Solution

2. Evaluate the following integrals

$$\int \frac{1}{x^2 + 6x + 10} \, dx$$



Watch Video Solution

3. Evaluate the following integrals

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



Watch Video Solution

4. Evaluate the following integrals

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



Watch Video Solution

5. Evaluate $\int \frac{dx}{4x^2 - 4x - 7}$



Watch Video Solution

6. Evaluate the following integrals

$$\int \frac{1}{5 + 4x - 2x^2} dx$$

[Watch Video Solution](#)

7. Evaluate the following integrals

$$\int \frac{1}{\sqrt{x^2 + 2x + 10}} dx$$

[Watch Video Solution](#)

8. Evaluate the following integrals

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

[Watch Video Solution](#)

9. Evaluate the following integrals

$$\int \frac{1}{\sqrt{5x - 6 - x^2}} dx$$

[Watch Video Solution](#)

10. Evaluate the following integrals

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



Watch Video Solution

11. Evaluate the following integrals

$$\int \sqrt{3 + 8x - 3x^3} dx$$



Watch Video Solution

12. Evaluate the following integrals

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



Watch Video Solution

13. Evaluate the following integrals

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



[View Text Solution](#)

14. Evaluate the following integrals

$$\int \frac{x + 1}{x^2 + 3x + 12} dx$$



[Watch Video Solution](#)

15. Evaluate the following integrals

$$\int \frac{x + 4}{6x - 7 - x^2} dx$$



[View Text Solution](#)

16. Evaluate the following integrals

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



Watch Video Solution

17. Evaluate the following integrals

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



Watch Video Solution

18. Evaluate the following integrals

$$\int \frac{2x - 3}{\sqrt{2x^2 + 5x - 6}} dx$$



Watch Video Solution

19. Evaluate the following integrals

$$\int \sqrt{\frac{1+x}{1-x}} dx \text{ on } (-1,1)$$



Watch Video Solution

20. Evaluate the following integrals

$$\int (3x - 2) \sqrt{2x^2 - x + 1} dx$$



View Text Solution

$$21. \int (6x + 5) \sqrt{6 - 2x^2 + x} dx$$



Watch Video Solution

22. Evaluate the following integrals

$$\int (5x - 3) \sqrt{x^2 - 6x + 13} dx$$

[Watch Video Solution](#)

23. Evaluate the following integrals

$$\int \frac{1}{(x+1)\sqrt{2x^2+3x+1}} dx, I \subset \mathbb{R} - \left[-1, -\frac{1}{2}\right]$$

[Watch Video Solution](#)

24. Evaluate the following integrals

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

[View Text Solution](#)

25. Evaluate the following integrals

$$\int \frac{1}{(1+\sqrt{x})\sqrt{x-x^2}} dx \text{ on } (0,1)$$

[View Text Solution](#)

26. Evaluate the integrals.

$$\int \frac{dx}{(1-x)\sqrt{3-2x-x^2}} \text{ on } (-1, 3).$$



Watch Video Solution

27. Evaluate the following integrals

$$\int \frac{1}{(x+1)\sqrt{x-1}} dx$$



Watch Video Solution

28. Evaluate the following integrals

$$\int \frac{1}{(2x+3)\sqrt{x+2}} dx$$



Watch Video Solution

29. Evaluate the following integrals

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



Watch Video Solution

30. Evaluate the following integrals

$$\int (x+2)\sqrt{x+1} dx$$



Watch Video Solution

31. $\int \frac{2x+3}{\sqrt{4x+3}} dx =$



Watch Video Solution

32. Evaluate the following integrals

$$\int \frac{1}{(x+5)\sqrt{x+4}} dx$$

[Watch Video Solution](#)

33. Evaluate the following integrals

$$\int \frac{1}{(x+3)\sqrt{x+2}} dx$$

[Watch Video Solution](#)

34. Evaluate the following integrals

$$\int \frac{1}{(x+2)\sqrt{x+1}} dx \text{ on } (-1, \infty)$$

[Watch Video Solution](#)

35. Evaluate the following integrals

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

[Watch Video Solution](#)

36. $\int \frac{1}{(x^2 + 9)\sqrt{x^2 - 9}} dx =$



Watch Video Solution

EXERCISE - 1.5(SHORT ANSWER QUESTIONS)

1. Evaluate the following integrals

$$\int \frac{1}{4\sin^2 x + 9\cos^2 x} dx$$



Watch Video Solution

2. Evaluate the following integrals

$$\int \frac{1}{4\sin^2 x + 3\sin x \cos x + 2\cos^2 x} dx$$



Watch Video Solution

EXERCISE - 1.5(LONG ANSWER QUESTIONS)

1. Evaluate the following integrals

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



Watch Video Solution

2. Evaluate the following integrals

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



Watch Video Solution

3. Evaluate the following integrals

$$\int \frac{1}{4\cos x + 3\sin x} dx$$



Watch Video Solution

4. $\int \frac{dx}{3\cos x + 4\sin x + 6}$



Watch Video Solution

5. Evaluate the integrals.

$$\int \frac{1}{2 - 3\cos 2x} dx$$



Watch Video Solution

6. Evaluate $\int \frac{1}{a\sin x + b\cos x} dx$ where $a, b \in R$ and $a^2 + b^2 \neq 0$ on R .



Watch Video Solution

7. Evaluate the following integrals

$$\int \frac{1}{\sin x + \sqrt{3}\cos x} dx$$



Watch Video Solution

8. $\int \frac{9\cos x - \sin x}{4\sin x + 5\cos x} dx$

 [Watch Video Solution](#)

9. Evaluate the integrals.

$$\int \frac{1}{1 + \tan x} dx$$

 [Watch Video Solution](#)

10. $\int \frac{2\sin x + 3\cos x + 4}{3\sin x + 4\cos x + 5} dx.$

 [Watch Video Solution](#)

EXERCISE - 1.6 (VERY SHORT ANSWER QUESTIONS)

1. Evaluate the following integrals

$$\int x e^x dx$$

 [Watch Video Solution](#)

2. Evaluate the integrals.

$$\int e^x (1 + x^2) dx$$

 [Watch Video Solution](#)

3. Evaluate the integrals.

$$\int x^2 e^{-3x} dx$$

 [Watch Video Solution](#)

4. $\int x \cos x dx =$



[Watch Video Solution](#)

5. Evaluate the following integrals

$$\int x \sec^2 x dx$$

[Watch Video Solution](#)

6. Evaluate the following integrals

$$\int x \sec^2 2x dx$$

[Watch Video Solution](#)

7. Evaluate the following integrals

$$\int x^2 \cos x dx$$

[Watch Video Solution](#)

8. $\int x \cos(x^2) dx =$



Watch Video Solution

9. Evaluate the following integrals

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



Watch Video Solution

10. Evaluate the integrals.

$$\int e^x (\tan x + \sec^2 x) dx$$

$$\text{on } I \subset \mathbb{R} \setminus \left\{ (2n+1)\frac{\pi}{2} : n \in \mathbb{Z} \right\}.$$



Watch Video Solution

11. Evaluate the following integrals

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



Watch Video Solution

12. Evaluate the following integrals

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



Watch Video Solution

13. Evaluate the following integrals

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



Watch Video Solution

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

[Watch Video Solution](#)

15. Evaluate the following integrals

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

[Watch Video Solution](#)

16. Evaluate the following integrals

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

[Watch Video Solution](#)

17. Evaluate the following integrals

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

[Watch Video Solution](#)

18. Evaluate the following integrals

$$\int e^x \left(\frac{x+2}{(x+3)^2} \right) dx$$



Watch Video Solution

EXERCISE - 1.6 (SHORT ANSWER QUESTIONS)

1. $\int \log x dx =$



Watch Video Solution

2. Evaluate the following integrals

$$\int x \log x dx$$



Watch Video Solution

3. Evaluate the following integrals

$$\int \frac{\log x}{x^2} dx$$



Watch Video Solution

4. Evaluate the following integrals

$$\int \sqrt{x} \log x dx$$



Watch Video Solution

5. Evaluate the integrals.

$$\int \log(1 + x^2) dx \text{ on } \mathbb{R}.$$



Watch Video Solution

6. Evaluate the following integrals

$$\int x \log(1 + x) dx$$

[Watch Video Solution](#)

7. Evaluate the integrals.

$$\int (\log x)^2 dx (0, \infty).$$

[Watch Video Solution](#)

8. Evaluate the integrals.

$$\int e^x \log(e^{2x} + 5e^x + 6) dx \text{ on } \mathbb{R}.$$

[Watch Video Solution](#)

9. Evaluate the following integrals

$$\int x \cos^{-1} x dx$$

[Watch Video Solution](#)

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



Watch Video Solution

11. Evaluate the following integrals

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



Watch Video Solution

12. Evaluate the following integrals

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



Watch Video Solution

13. Evaluate the following integral

$$\int x \sinh^{-1} x dx$$



Watch Video Solution

[Watch Video Solution](#)

14. Evaluate the following integrals

$$\int x \tanh^{-1} x \, dx, |x| < 1$$



[Watch Video Solution](#)

15. $\int \sinh^{-1} x \, dx =$



[Watch Video Solution](#)

16. $\int \cosh^{-1} x \, dx =$



[Watch Video Solution](#)

17. Evaluate the following integrals

$$\int \tanh^{-1} x \, dx \text{ or } R$$

[Watch Video Solution](#)

18. $\int \tan^{-1} \left(\frac{2x}{1-x^2} \right) dx =$

[Watch Video Solution](#)

19. Evaluate $\int \tan^{-1} \sqrt{\frac{1-x}{1+x}} dx$, on $(-1,1)$

[Watch Video Solution](#)

20. Evaluate the following integrals

$$\int x \tan^{-1}(x^2) dx$$

[View Text Solution](#)

21. Evaluate the following integrals

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



Watch Video Solution

22. Evaluate the following integrals

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



Watch Video Solution

23. Evaluate the following integrals

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



Watch Video Solution

24. Evaluate the following integrals

$$\int e^{\sqrt{x}} dx$$

 [Watch Video Solution](#)

25. $\int \cos \sqrt{x} dx =$

 [Watch Video Solution](#)

26. Evaluate the following integrals

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

 [Watch Video Solution](#)

27. $\int \sin(\log x) dx =$

 [Watch Video Solution](#)

28. Evaluate the following integrals

$$\int 2^x \cos x \, dx$$



Watch Video Solution

29. Evaluate the following integral

$$\int e^{2x} \cos x \cos 3x \, dx$$



View Text Solution

30. Evaluate the following integrals

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



Watch Video Solution

31. Evaluate the integrals.

$$\int e^{ax} \sin bx dx \text{ on } \mathbb{R}, a, b, \in \mathbb{R}.$$



Watch Video Solution

32. Evaluate the following integrals

$$\int \sin^{-1} x dx \text{ on } (-1, 1)$$



Watch Video Solution

33. $\int \cos^{-1} x dx$



Watch Video Solution

34. Evaluate the following integrals

$$\int \tan^{-1} x dx \text{ on } \mathbb{R}$$



[Watch Video Solution](#)

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

[Watch Video Solution](#)

36. Evaluate the following integrals

$\int \operatorname{cosec}^{-1} x \, dx$ on $I \subset (1, \infty)$

[Watch Video Solution](#)

37. $\int \sec^{-1} x dx =$

[Watch Video Solution](#)

EXERCISE - 1.7 (SHORT ANSWER QUESTIONS)

1. Evaluate the following integrals

$$\int x^3 e^{2x} dx$$



Watch Video Solution

2. Evaluate the following integrals

$$\int \sin^4 x dx$$



Watch Video Solution

3. $\int \cos^5 x dx =$



Watch Video Solution

4. Evaluate the following integrals

$$\int \tan^5 x dx$$



Watch Video Solution

5. $\int \cos^5 x dx =$



Watch Video Solution

6. $\int \sec^4 x dx =$



Watch Video Solution

7. Evaluate the following integrals

$$\int \operatorname{cosec}^4 x dx$$



Watch Video Solution

8. Evaluate the integrals.

$$\int e^x (1 + x^2) dx$$



[Watch Video Solution](#)

9. Evaluate the following integrals

$$\int \sin^4 x \cos^5 x dx$$

[Watch Video Solution](#)

10. Evaluate the integrals.

$$\int x^3 e^{ax} dx \text{ a}$$

[Watch Video Solution](#)

11. If $I_n = \int x^n e^{-x} dx$ prove that $I_n = -x^n e^{-x} + nI_{n-1}$

[Watch Video Solution](#)

12. Obtain reduction formula for

If $I_n = \int (\log x)^n dx$, then show that

$I_n = x(\log x)^n - nI_{n-1}$, and hence find $\int (\log x)^4 dx$.



Watch Video Solution

MISCELLANEOUS QUESTIONS

1. Evaluate the following integrals

$$\int (ax^2 + bx + c) dx$$



Watch Video Solution

2. Evaluate the following integrals

$$\int (5x^4 + 7) dx$$



Watch Video Solution

3. Evaluate the following integrals

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



Watch Video Solution

4. Evaluate the following integrals

$$\int (3x - 4)(x - 2) dx$$



Watch Video Solution

5. Evaluate the following integrals

$$\int x^3 (4 + x^2)^2 dx$$



Watch Video Solution

6. Evaluate the following integrals

$$\int \frac{1}{x\sqrt{x}} dx$$



Watch Video Solution

7. Evaluate the following integrals

$$\int e^{2\log x} dx$$



Watch Video Solution

8. Evaluate the following integrals

$$\int 7e^x dx$$



Watch Video Solution

9. Evaluate the following integrals

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



[Watch Video Solution](#)

10. Evaluate the following integrals

$$\int \tan^2 x dx$$



[Watch Video Solution](#)

11. Evaluate the following integrals

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



[Watch Video Solution](#)

12. Evaluate the following integrals

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



Watch Video Solution

13. Evaluate the following integrals

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



Watch Video Solution

14. Evaluate the following integrals

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



Watch Video Solution

15. $\int \frac{1 + \sin^2 x}{1 + \cos 2x} dx =$

[Watch Video Solution](#)

16. Evaluate the following integrals

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

[Watch Video Solution](#)

17. Evaluate the integrals.

$$\int \frac{\cos x + \sin x}{\sqrt{1 + \sin 2x}} dx$$

$$I \subset \left\{ 2n\pi - \frac{\pi}{4}, 2n\pi, 2n\pi + \frac{3\pi}{4} \right\}, n \in \mathbb{Z}.$$

[Watch Video Solution](#)

18. Evaluate the following integrals

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

[Watch Video Solution](#)

[Watch Video Solution](#)

19. Evaluate the following integrals

$$\int \frac{\cos 6x - \cos 4x}{\sin 6x - \sin 4x} dx$$

[Watch Video Solution](#)

20. Evaluate the following integrals

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

[Watch Video Solution](#)

21. Evaluate the integrals.

$\int \sin mx \sin nx dx$ on R , $m \neq n$, m and n are positive integers.

[Watch Video Solution](#)

22. Evaluate the following integrals

$$\int \cos mx \cos nx \, dx$$

 [Watch Video Solution](#)

23. Evaluate the following integrals

$$\int \left(2x^2 - 3 \sin x + 5\sqrt{x} \right) dx$$

 [Watch Video Solution](#)

24. Evaluate the following integrals

$$\int \left(4x^{\frac{3}{2}} - \frac{5}{\sqrt{x}} + \sin x \right) dx$$

 [Watch Video Solution](#)

25. $\int \left[\frac{1}{\sqrt{1-x^2}} + 2^x + e^x \right] dx =$

 [Watch Video Solution](#)

26. Evaluate the following integrals

$$\int \frac{3x + 7}{3x^2 + 14x - 5}$$

 [Watch Video Solution](#)

27. Evaluate the following integrals

$$\int \frac{4x + 1}{\sqrt{2x^2 + x - 3}} dx$$

 [Watch Video Solution](#)

28. Evaluate the following integrals

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



Watch Video Solution

29. Evaluate the following integrals

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



Watch Video Solution

30. Evaluate the following integrals

$$\int \frac{\cos x}{\sqrt{1 + \sin x}} dx$$



Watch Video Solution

31. Evaluate the following integrals

$$\int \frac{\operatorname{cosec}^2 x}{(1 + \cot x)^2} dx$$



Watch Video Solution

32. Evaluate the following integrals

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



Watch Video Solution

33. Evaluate the following integrals

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



Watch Video Solution

34. Evaluate the following integrals

$$\int \frac{dx}{\sqrt{x^2 - 36}}$$



Watch Video Solution

35. Evaluate the following integrals

$$\int \frac{dx}{x^2 + 81}$$



Watch Video Solution

36. Evaluate the following integrals

$$\int \frac{dx}{x^2 - 64}$$



Watch Video Solution

37. Evaluate the following integrals

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



Watch Video Solution

38. Evaluate the following integrals

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



Watch Video Solution

39. Evaluate the following integrals

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



Watch Video Solution

40. $\int \frac{1}{9x^2 + 16} dx =$

[Watch Video Solution](#)

41. Evaluate the following integrals

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

[Watch Video Solution](#)

42. Evaluate the following integrals

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

[Watch Video Solution](#)

43. Evaluate the following integrals

$$\int \frac{dx}{\sqrt{36 - x^2}}$$

[Watch Video Solution](#)

44. Evaluate the following integrals

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



Watch Video Solution

45. Evaluate the following integrals

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



Watch Video Solution

46. Evaluate the following integrals

$$\int \sqrt{49-x^2} dx$$



Watch Video Solution

47. Evaluate the following integrals

$$\int \sqrt{x^2 - 49} \, dx$$



Watch Video Solution

48. Evaluate the following integrals

$$\int \sqrt{49 + x^2} \, dx$$



Watch Video Solution

49. Evaluate the following integrals

$$\int \sqrt{x^2 + 4} \, dx$$



Watch Video Solution

50. Evaluate the following integrals

$$\int \sqrt{16 + x^2} dx$$

 [Watch Video Solution](#)

51. Evaluate the following integral

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

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

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



 Watch Video Solution

54. Evaluate the following integrals

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



Watch Video Solution

55. Evaluate the following integrals

$$\int \frac{1}{x + x \log x} dx$$



Watch Video Solution

56. Evaluate the following integrals

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



Watch Video Solution

57. Evaluate the following integrals

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



Watch Video Solution

58. Evaluate the following integrals

$$\int \frac{1}{x(2+3\log x)} dx$$



Watch Video Solution

59. Evaluate the following integrals

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



Watch Video Solution

60. Evaluate the following integrals

$$\int \frac{\cos\sqrt{x}}{\sqrt{x}} dx$$



Watch Video Solution

61. Evaluate the following integrals

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



Watch Video Solution

62. Evaluate the following integrals

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



Watch Video Solution

63. Evaluate the following integrals

$$\int \cos ex \log (\cos ecx - \cot x) dx$$



Watch Video Solution

$$64. \int \frac{\sec^2 x}{\sqrt{a + b \tan x}} dx =$$



Watch Video Solution

65. Evaluate the following integrals

$$\int \frac{\sec x \cos ecx}{\log(\tan x)} dx$$



Watch Video Solution

$$66. \int x \sin(-x^2) dx =$$



Watch Video Solution

67. $\int \frac{\sec x}{(\sec x + \tan x)^2} dx =$



Watch Video Solution

68. Evaluate the following integrals

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



Watch Video Solution

69. Evaluate the following integrals

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



Watch Video Solution

70. Evaluate the following integrals

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



View Text Solution

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



Watch Video Solution

72. Evaluate the integrals.

$$\int \frac{dx}{(x^2 + a^2)^2}, (a > 0) \text{ on } \mathbb{R}.$$



Watch Video Solution

73. Evaluate the following integrals

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



Watch Video Solution

74. Evaluate the following integrals

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



View Text Solution

75. Evaluate the following integrals

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



View Text Solution

76. $\int \frac{x}{1+x^4} dx =$



Watch Video Solution

77. Evaluate the integrals.

$$\int \sqrt{e^x - 4} dx \text{ on } [\log_e 4, \infty).$$



Watch Video Solution

78. Evaluate the integrals.

$$\int \sqrt{x + \sec x} dx$$

$$\text{on } \left[\left(2n - \frac{1}{2} \right) \pi, \left(2n + \frac{1}{2} \right) \pi \right], (n \in \mathbb{Z}).$$



Watch Video Solution

79. $\int \frac{x^2}{x^6 + 2x^3 + 2} dx =$

[Watch Video Solution](#)

80. Evaluate the following integrals

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

[View Text Solution](#)

81. Evaluate the following integrals

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

[Watch Video Solution](#)

82. Evaluate the following integrals

$$\int \frac{x^5}{x^3 - 1} dx$$

[Watch Video Solution](#)

83. Evaluate the following integrals

$$\int \frac{\cos x}{\sqrt{3\sin^2 x - 4\sin x + 5}} dx$$



View Text Solution

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



Watch Video Solution

85. $\int \frac{1}{x^4 + 1} dx =$



Watch Video Solution

86. Evaluate the integrals.

$$\int \frac{x^2 + 1}{x^4 + 1} dx \text{ on } \mathbb{R}.$$

[Watch Video Solution](#)

87. Evaluate the integrals.

$$\int \frac{dx}{a^2 \sin^2 x + b^2 \cos^2 x} \text{ on } \mathbb{R}, a \neq 0, b \neq 0.$$

[Watch Video Solution](#)

88. $\int \frac{1}{\cos x + \sin x} dx =$

[Watch Video Solution](#)

89. Evaluate the following integrals

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

[Watch Video Solution](#)

90. Evaluate the following integrals

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



Watch Video Solution

91. $\int \frac{3\cos x + 2\sin x}{4\cos x + 3\sin x} dx =$



Watch Video Solution

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



Watch Video Solution

93. Evaluate the following integrals

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

[Watch Video Solution](#)

94. $\int e^x(\cos x - \sin x)dx =$

[Watch Video Solution](#)

95. Evaluate the following integrals

$$\int e^x(x^2 + 2x) dx$$

[Watch Video Solution](#)

96. Evaluate the following integrals

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

[Watch Video Solution](#)

97. $\int x^2 \log x dx =$



Watch Video Solution

98. Evaluate the integrals.

$$\int e^x \log(e^{2x} + 5e^x + 6) dx \text{ on } R.$$



Watch Video Solution

ADDITIONAL INFORMATION

1. Evaluate the following integrals

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



Watch Video Solution

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



Watch Video Solution

3. Evaluate the following integrals

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



View Text Solution

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



Watch Video Solution

5. Evaluate the following integrals

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



Watch Video Solution

 Watch Video Solution

6. Evaluate the following integrals

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

 Watch Video Solution

7. $\int \frac{x^2}{x^4 + 1} dx =$

 Watch Video Solution

8. Evaluate the following integrals

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

 Watch Video Solution

9. Evaluate the following integrals

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



View Text Solution

10. $\int \frac{1}{x^4 + 1} dx =$



Watch Video Solution

11. Evaluate the following integrals

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



View Text Solution

12. Evaluate the following integrals

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

[Watch Video Solution](#)

ADDITIONAL EXERCISE

1. Evaluate the following integrals

$$\int \frac{1}{n\sqrt{(x-a)^{n-k}(x-b)^{n+k}}} dx \quad (\text{Hint Put } \frac{x-a}{x-b} = t)$$

[View Text Solution](#)

$$2. \int \frac{(x^2 - 1)dx}{(x^4 + 3x^2 + 1)\tan^{-1}\left(\frac{x^2+1}{x}\right)} =$$

[Watch Video Solution](#)

$$3. \int \frac{x^4 - 1}{x^2\sqrt{x^4 + x^2 + 1}} dx =$$

[Watch Video Solution](#)

4. Evaluate the following integrals

$$\int \frac{1}{x^4 \sqrt{x^2 + 4}} dx$$

[View Text Solution](#)

5. Evaluate the following integrals

$$\int \left(x + \sqrt{x^2 + 1} \right)^n dx$$

[View Text Solution](#)

6. Evaluate the following integral

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

[Watch Video Solution](#)

7. Evaluate the following integral

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



Watch Video Solution

8. Evaluate the following integral

$$\int \frac{\cos 5x + \cos 4x}{1 - 2\cos 3x} dx$$



Watch Video Solution

9. Evaluate the following integral

$$\int \frac{\cos 7x - \cos 8x}{1 + 2\cos 5x} dx$$



Watch Video Solution

10. Evaluate the following integrals

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

 [Watch Video Solution](#)

11. Evaluate the following integral

$$\int \frac{1}{\sqrt{\sin^3 x \sin(x + \alpha)}} \, dx$$

 [Watch Video Solution](#)

12. Evaluate the following integrals

$$\int \frac{\sin^{3/2} x + \cos^{3/2} x}{\sqrt{\sin^3 x \cdot \cos^3 x \cdot \sin(x + \theta)}} \, dx$$

 [View Text Solution](#)

13. Evaluate the following integrals

$$\int \left(x^{3m} + x^{2m} + x^m \right) \left(2x^{2m} + 3x^m + 6 \right)^{\frac{1}{m}} dx \quad (x > 0) \quad (m \in \mathbb{N})$$



[View Text Solution](#)

14. Evaluate the following integrals

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



[View Text Solution](#)

15. If $I_n = \int x^{-n} e^{ax} dx$ then prove that $I_n = \frac{-e^{ax}}{(n-1)x^{n-1}} + \frac{a}{n-1} I_{n-1}$



[Watch Video Solution](#)

16. show that $\int \frac{1}{(x^2 + a^2)^3} dx$

$$= \frac{1}{4a^2} \frac{x}{(x^2 + a^2)^2} + \frac{3}{8a^4} \frac{x}{x^2 + a^2} + \frac{3}{8a^5} \tan^{-1} \left(\frac{x}{a} \right) + c$$



Watch Video Solution

EXERCISE - I

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

A. $x - \tan^{-1}x + c$

B. $2x - 2\tan^{-1}x + c$

C. $x + 2\tan^{-1}x + c$

D. $x - 2\tan^{-1}x + c$

Answer: D

 Watch Video Solution

2. If $x < -1$ then $\int \frac{1}{\sqrt{x^2 + 2x + 1}} dx =$

A. $\log [x + 1] + c$

B. $-\log |x + 1| + c$

C. $2 \log |x + 1| + c$

D. $\frac{1}{2} \log |x + 1| + c$

Answer: B

 Watch Video Solution

3. $\int \frac{1 - \sqrt{x}}{1 + (x)^{\frac{1}{4}}} dx =$

A. $x - \frac{4}{5}x^{5/4} + c$

B. $x + \frac{4}{5}x^{5/4} + c$

C. $x - \frac{2}{5}x^{5/4} + c$

D. $x - \frac{3}{5}x^{5/4} + c$

Answer: A



Watch Video Solution

4. $\int \frac{(1+x) + \sqrt{x} \cdot \sqrt{1+x}}{\sqrt{x} + \sqrt{1+x}} \Bigg) dx$ is equal to

A. $\frac{1}{2}\sqrt{1+x} + c$

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

C. $\sqrt{1+x} + c$

D. $2(1+x)^{3/2} + c$

Answer: B



Watch Video Solution

5. Evaluate the following integrals

$$\int \left(\frac{1}{\sqrt{x+a}\sqrt{x+b}} \right) dx =$$

A. $\frac{3}{2(a-b)} \left((x+b)^{3/2} - (x+a)^{3/2} \right) + c$

B. $\frac{2}{3(a-b)} \left((x+a)^{3/2} - (x+b)^{3/2} \right) + c$

C. $\frac{2}{3(a-b)} \left((x-a)^{3/2} - (x+b)^{3/2} \right) + c$

D. $\frac{2}{3(a-b)} \left((x-a)^{3/2} - (x-b)^{3/2} \right) + c$

Answer: B



View Text Solution

6. Evaluate the following integrals

$$\int \frac{1}{x} \sqrt{\frac{x-1}{x+1}} dx =$$

A. $\cosh^{-1}x - \sec^{-1}x + c$

B. $\cosh^{-1}x + \sec^{-1}x + c$

C. $\sinh^{-1}x - \sec^{-1}x + c$

D. $\sinh^{-1}x - \operatorname{cosec}^{-1}x + c$

Answer: A



View Text Solution

7. $\int \left[1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots \right] dx =$

A. $e^x + C$

B. $\frac{e^{2x}}{2} + C$

C. $2e^x + C$

D. $\frac{1}{2}e^x + C$

Answer: A



Watch Video Solution

8. Evaluate the following integrals

$$\int e^{2\log \cot x} dx =$$

A. $\cot x - x + c$

B. $\cot x + x + c$

C. $\tan x - x + c$

D. $-\cot x - x + c$

Answer: D



Watch Video Solution

9. Evaluate the following integrals

$$\int \log(\cosh x + \sinh x) dx =$$

A. $x + c$

B. $\frac{x^2}{2} + c$

C. $e^x + c$

D. c

Answer: B



Watch Video Solution

10. Evaluate the following integrals

$$\int 2^{\log_4 x} dx =$$

A. $\sqrt{x} + c$

B. $\frac{2}{3}x^{3/2} + c$

C. $\frac{1}{2\sqrt{x}} + c$

D. $\frac{1}{2\sqrt{x}} + c$

Answer: B



Watch Video Solution

11. If $\int \frac{2^x 3^x}{5^{2x} \cdot 7^x} dx = \frac{1}{k} \left(\frac{2^x \cdot 3^x}{5^{2x} \cdot 7^x} \right) + c$ then $k =$

A. $\log 2 - \log 3 + 2\log 5 - \log 7$

B. $\log 2 + \log 3 + 2\log 5 + \log 7$

C. $\log 2 + \log 3 - 2\log 5 - \log 7$

D. $\frac{1}{\log 2 + \log 3 - 2 \log 5 - \log 7}$

Answer: C



Watch Video Solution

12. $\int \tanh^2 x dx =$

A. $x - \tanh x + c$

B. $x - \cos x + c$

C. $x + \tanh x + c$

D. $x + \coth x + c$

Answer: A



Watch Video Solution

13. $\int \frac{1}{1 - \sin x} dx =$

A. $\tan x + \sec x + c$

B. $\sec x - \tan x + c$

C. $\tan x - \sec x + c$

D. $x + \sec x + c$

Answer: A



View Text Solution

14. $\int \sec^2 x \operatorname{cosec}^2 x dx =$

A. $\tan x + x + c$

B. $\tan x - x + c$

C. $\tan x - \cot x + c$

D. $\tan x + \cot x + c$

Answer: C



Watch Video Solution

15. $\int \frac{1 + \sin^2 x}{1 + \cos 2x} dx =$

A. $2\tan x - \frac{1}{2}x + c$

B. $\tan x - \frac{1}{2}x + c$

C. $\tan x + \frac{1}{2} + c$

D. $\tan x - \frac{1}{2}x + c$

Answer: B



Watch Video Solution

16. $\int (1 - \cos x) \operatorname{cosec}^2 x dx = f(x) + c \Rightarrow f(x) =$

A. $\tan x / 2$

B. $\cot x / 2$

C. $2 \tan x / 2$

D. $\frac{1}{2} \tan x / 2$

Answer: A

[Watch Video Solution](#)

17. If $\int \frac{\sin^2 \alpha - \sin^2 x}{\cos x - \cos \alpha} dx = f(x) + Ax + B$ and $B \in \mathbb{R}$ then

- A. $f(x) = 2 \sin x, A = \cos \alpha$
- B. $f(x) = 2 \sin x, A = 2 \cos \alpha$
- C. $f(x) = \sin x, A = \cos \alpha$
- D. $f(x) = \sin x, A = 2 \cos \alpha$

Answer: C

[Watch Video Solution](#)

18. $\int \frac{3\cos^2 x + 4\sin^2 x}{\cos^2 x \sin^2 x} dx =$

- A. $-3 \cot x + x \tan x + c$
- B. $3 \cot x + 4 \tan x + c$

C. $-3\cot x + 4 \tan x + c$

D. $-3 \cot x - 4 \tan x + c$

Answer: C



Watch Video Solution

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

A. $\sin x + \cos x + c$

B. $\tan x + \cot x + c$

C. $\sec x - \operatorname{cosec} x + c$

D. $\sin x - \cos x + c$

Answer: C



Watch Video Solution

20. If $x > 0$ then $\int \left(\tan^{-1} \frac{x}{x^2 + 1} + \tan^{-1} \frac{x^2 + 1}{x} \right) dx =$

A. $\frac{x}{2} + c$

B. $x + c$

C. $\pi x + c$

D. $\frac{\pi x}{2} + c$

Answer: D



Watch Video Solution

21. $\int \left(\sum_{r=0}^{\infty} \frac{x^r 3^r}{r!} \right) dx =$

A. $e^x + c$

B. $\frac{e^{3x}}{3} + c$

C. $\frac{-3}{1-3x} + c$

D. $3e^{3x} + c$

Answer: B



Watch Video Solution

22. $\int \sin 4x \cos 3x \, dx =$

A. $\frac{1}{2}(\cos 7x + \cos x) + c$

B. $\frac{1}{14}(\cos 7x + \frac{1}{2} \cos x) + c$

C. $-\frac{1}{14}(\cos 7x + 7 \cos x) + c$

D. $\frac{1}{14}(\cos 7x + 7 \cos x) + c$

Answer: C



Watch Video Solution

23. If $x \in \left(0, \frac{\pi}{2}\right)$ then $\int \sqrt{1 + \cos x} \, dx =$

A. $\sqrt{2} \sin\left(\frac{x}{2}\right) + c$

B. $2\sqrt{2} \sin\left(\frac{x}{2}\right) + c$

C. $3\sqrt{2} \sin\left(\frac{x}{2}\right) + c$

D. $2 \sin\left(\frac{x}{2}\right) + c$

Answer: B



Watch Video Solution

24. $\int \frac{1 + \cos x}{1 - \cos x} \, dx =$

A. $2 \cot\left(\frac{x}{2}\right) - x + c$

B. $-2 \cot\left(\frac{x}{2}\right) - x + c$

C. $-2\cot\left(\frac{x}{2}\right) + x + c$

D. $2\cot\left(\frac{x}{2}\right) + x + c$

Answer: B



Watch Video Solution

25. $\int \frac{1 - \tan x/2}{1 + \tan x/2} dx =$

A. $2\log\left|\sec\frac{x}{2}\right| + c$

B. $2\log\left|\cos\frac{x}{2}\right| + c$

C. $2\log\left|\sec\left(\frac{\pi}{4} - \frac{x}{2}\right)\right| + c$

D. $2\log\left|\cos\left(\frac{\pi}{4} - \frac{x}{2}\right)\right| + c$

Answer: D



Watch Video Solution

26. $\int x^2 \sin(x^3) dx$

A. $-\frac{1}{3} \cos(x^3) + c$

B. $\frac{1}{3} \cos(x^3) + c$

C. $-\frac{1}{3} \sin(x^3) + c$

D. $\frac{1}{3} \sin(x^3) + c$

Answer: A



Watch Video Solution

27. $\int \frac{1 + \cos x}{(x + \sin x)^2} dx =$

A. $\frac{1}{x + \sin x} + c$

B. $-\frac{1}{x + \sin x} + c$

C. $\frac{2}{x + \sin x} + c$

$$\text{D. } -\frac{2}{x + \sin x} + c$$

Answer: B



Watch Video Solution

$$28. \int \frac{e^{\sqrt{x}} \sin(e^{\sqrt{x}})}{\sqrt{x}} dx =$$

A. $-2\cos(e^x) + c$

B. $2\cos(e^{\sqrt{x}}) + c$

C. $2e^{\sqrt{x}}\cos(e^{\sqrt{x}}) + c$

D. $-2\cos(e^{\sqrt{x}}) + c$

Answer: A



Watch Video Solution

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

A. $\tan^{-1}(\log x) + c$

B. $-2\tan^{-1}(\log x) + c$

C. $2\tan^{-1}(\log x) + c$

D. $-\tan^{-1}(\log x) + c$

Answer: C

 **Watch Video Solution**

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

A. $-\cot(xe^x) + c$

B. $\cot(xe^x) + c$

C. $\tan(xe^x) + c$

D. $-\tan\left(xe^x\right) + c$

Answer: A



Watch Video Solution

31. $\int \frac{x^3}{\sqrt{1-x^8}} dx =$

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

B. $\frac{1}{2} \sin^{-1}\left(x^4\right) + c$

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

D. $\frac{1}{2} \cos^{-1}\left(x^4\right) + c$

Answer: A



Watch Video Solution

$$32. \int \frac{x^{49} \tan^{-1}(x^{50})}{(1 + x^{100})} dx = k \left(\tan^{-1}(x^{50})^2 + c \right) \Rightarrow k =$$

A. $\frac{1}{50}$

B. $\frac{-1}{50}$

C. $\frac{1}{100}$

D. $\frac{-1}{100}$

Answer: C



Watch Video Solution

$$33. \int (4x + 3) \sqrt{2x^2 + 3x + 5} dx =$$

A. $\frac{1}{3} (2x^2 + 3x + 5)^{3/2} + c$

B. $\frac{2}{3} (2x^2 + 3x + 5)^{3/2} + c$

C. $\frac{2}{3} (2x^2 - 3x - 5)^{3/2} + c$

D. $\frac{3}{2} \left(2x^2 + 3x + 5 \right)^{3/2} + c$

Answer: B



Watch Video Solution

34. $\int \sec x \log(\sec x + \tan x) dx =$

A. $(\log(\sec x + \tan x))^2 + c$

B. $\frac{1}{2}(\log(\sec x - \tan x))^2 + c$

C. $\frac{1}{2}(\log(\sec x + \tan x))^2 + c$

D. $\frac{1}{3}(\log(\sec x + \tan x))^2 + c$

Answer: C



Watch Video Solution

35. $\int \operatorname{cosec}^m x \cot x \, dx =$

A. $\frac{\operatorname{cosec}^m x}{m} + c$

B. $\frac{-1}{m-1} \operatorname{cosec}^m x + c$

C. $-\frac{1}{m \sin^m x} + c$

D. $\frac{1}{m} \sin^m x + c$

Answer: C



Watch Video Solution

36. $\int \frac{\sin^6 x}{\cos^8 x} \, dx =$

A. $\tan(7x) + c$

B. $\frac{\tan^7 x}{7} + c$

C. $\frac{\tan 7x}{7}$

D. $\sec^7 x + c$

Answer: B



Watch Video Solution

37. $\int \frac{1}{x^2} e^{\frac{x-1}{x}} dx =$

A. $e^{\frac{x}{x-1}} + c$

B. $e^{\frac{x-1}{x}} + c$

C. $-e^{\frac{x}{x-1}} + c$

D. $-e^{\frac{x-1}{x}} + c$

Answer: B



Watch Video Solution

38. $\int \frac{dx}{(x-1)\sqrt{x^2-1}} =$

A. $-\sqrt{\frac{x-1}{x+1}} + c$

B. $-\sqrt{\frac{x+1}{x-1}} + c$

C. $\sqrt{\frac{x-1}{x^2+1}} + c$

D. $-\sqrt{\frac{x^2+1}{x^2-1}} + c$

Answer: B



Watch Video Solution

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

A. $\frac{1}{2} \log |x^2-1| + \cos^{-1} x + c$

B. $\frac{1}{2} \log |x^2-2| + \tan^{-1} x + c$

C. $\frac{1}{2} \log \left| x^2 + 1 \right| + \tan^{-1} x + c$

D. $\frac{1}{2} \log \left| x^2 - 1 \right| - \tan^{-1} x + c$

Answer: C



Watch Video Solution

40. $\int \frac{1}{x(2 + 3\log x)} dx =$

A. $\frac{1}{3} \log |2 + 3 \log x| + c$

B. $\frac{1}{3} \log |2 - 3 \log x| + c$

C. $\frac{1}{3} \log |3 + 2 \cos x| + c$

D. $\frac{1}{2} \log |3 + 3 \log x| + c$

Answer: A



Watch Video Solution

41. $\int \frac{1 + \log x}{1 + x \log x} dx =$

A. $\log |1 + x \log x| + c$

B. $\log |x \log x| + c$

C. $\log |1 + \log x| + c$

D. $1 + x \log x + c$

Answer: A



Watch Video Solution

42. $\int \frac{dx}{x(1 + \log x)^3} =$

A. $-\frac{1}{2(1 + \log x)^2} + c$

B. $-\frac{1}{2(1 + \log x)^3} + c$

C. $\frac{1}{1 + \log x} + c$

D. $-\frac{1}{3(1 + \log x)^3} + c$

Answer: A



Watch Video Solution

43. $\int \frac{1 - \tan x}{1 + \tan x} dx =$

- A. $\log |\cos x - \sin x| + c$
- B. $\log |\cos x + \sin x| + c$
- C. $-\log |\cos x + \sin x| + c$
- D. $-\log |\cos x - \sin x| + c$

Answer: B



Watch Video Solution

44. $\int \frac{1}{\sqrt{x} + x} dx =$

A. $\log(x + \sqrt{x}) + c$

B. $\log(1 + \sqrt{x}) + c$

C. $2\log(x + \sqrt{x}) + c$

D. $2\log(1 + \sqrt{x}) + c$

Answer: D



Watch Video Solution

45. $\int \frac{1}{\operatorname{cosec} x - \cot x} dx =$

A. $-\log |1 - \cos x| + c$

B. $\log |1 + \cos x| + c$

C. $\log |1 - \cos x| + c$

D. $-\log |1 + \cos x| + c$

Answer: C

[Watch Video Solution](#)

46. Evaluate the integrals.

$$\int \sqrt{e^x - 4} dx \text{ on } [\log_e 4, \infty).$$

A. $\tan^{-1} \left(\frac{\sqrt{e^x - 4}}{2} \right) + \sqrt{e^x - 4} + x$

B. $2\sqrt{e^x - 4} - \tan^{-1} \left(\frac{\sqrt{e^x - 4}}{2} \right) + c$

C. $2\sqrt{e^x - 4} \cot^{-1} \left(\frac{\sqrt{e^x - 4}}{2} \right) + c$

D. $\sqrt{e^x - 4} - 4 \tan^{-1} \left(\sqrt{e^x - 4} \right) + c$

Answer: B

[Watch Video Solution](#)

47. If $\int \frac{e^x - 1}{e^x + 1} dx = f(x) + c$, then $f(x) =$

A. $2 \log \left(e^x + 1 \right)$

B. $\log \left(e^{2x} - 1 \right)$

C. $2 \log \left(e^x + 1 \right) - x$

D. $\log \left(e^{2x} + 1 \right)$

Answer: C

 **Watch Video Solution**

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

A. $\frac{1}{e} \log \left| x^e + e^x \right| C$

B. $e \log \left| x^e + e^x \right| + c$

C. $-\frac{1}{e} \log \left| x^e + e^x \right| + C$

D. $-e \log \left| x^e + e^x \right| + C$

Answer: A

[Watch Video Solution](#)

$$49. \int \frac{e^x + e^{-x}}{(e^x - e^{-x}) \log \sinh x} dx =$$

A. $\log |\cosh x| + c$

B. $\log (\log \cosh x) + c$

C. $\log (\log \sinh x) + c$

D. $\log (\log (e^x + e^{-x})) + c$

Answer: C

[Watch Video Solution](#)

$$50. \int \frac{e^x}{(1 + e^{2x}) \tan^{-1}(e^x)} dx =$$

A. $\log \left| \tan^{-1}(e^x) \right| + c$

B. $\log \left| \cot^{-1} \left(e^x \right) \right| + c$

C. $\log \left| l + e^{2x} \right| + c$

D. $\log \left| 1 + e^x \right| + c$

Answer: A



Watch Video Solution

51. $\int \sec x \operatorname{cosec} x dx =$

A. $\log | \tan x | + C$

B. $\log | \sin x | + C$

C. $\log | \sec x | + C$

D. $\log | \operatorname{cosec} x | + C$

Answer: A



Watch Video Solution

52. If $\int \frac{4\sec^2 x \tan x}{\sec^2 x + \tan^2 x} dx = \log |1 + f(x)| + C$ then $f(x) =$

A. $2 \sin^2 x$

B. $2\cos^2 x$

C. $2\tan^2 x$

D. $2\cot^2 x$

Answer: C



Watch Video Solution

53. $\int \frac{1}{\tan x \tan(60^\circ - x) \tan(60^\circ + x)} dx =$

A. $\frac{1}{3} \log |\sin 3x| + C$

B. $3 \log |\sin 3x| + C$

C. $\frac{1}{2} \log |\sin 3x| + C$

D. $\frac{1}{3} \log |\cos 3x| + C$

Answer: A



Watch Video Solution

54. $\int \frac{\sin 2x}{1 + \sin^4 x} dx =$

A. $\tan^{-1}(\sin^2 x) + C$

B. $-\tan^{-1}(\sin^2 x) + C$

C. $\tan^{-1}(\cos^2 x) + C$

D. $-\tan^{-1}(\cos^2 x) + c$

Answer: A



Watch Video Solution

$$55. \int \frac{1}{\sqrt{2+3x^2}} dx =$$

$$\text{A. } \frac{1}{\sqrt{3}} \sinh^{-1} \left(\frac{\sqrt{3}x}{\sqrt{2}} \right) + c$$

$$\text{B. } \frac{1}{\sqrt{3}} \sinh^{-1} \left(\frac{\sqrt{2}x}{\sqrt{3}} \right) + c$$

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

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

Answer: A



Watch Video Solution

$$56. \int \frac{3^x}{\sqrt{9^x - 1}} dx =$$

$$\text{A. } \frac{1}{\log 3} \log \left| 3^x + \sqrt{9^x - 1} \right| + c$$

$$\text{B. } \frac{1}{\log 3} \log \left| 3^x - \sqrt{9^x - 1} \right| + c$$

$$\text{C. } \frac{1}{\log 9} \log \left| 3^x - \sqrt{9^x - 1} \right| + c$$

$$\text{D. } \frac{1}{\log 9} \log \left| 3^x + \sqrt{9^x - 1} \right| + c$$

Answer: A



Watch Video Solution

57. Match the following.

$$\text{I. } \int \frac{1}{9 + x^2} dx = a \left) \frac{1}{6} \log \left| \frac{3 + x}{3 - x} \right| + c$$

$$\text{II. } \int \frac{1}{x^2 - 9} dx = b \left) \frac{1}{6} \log \left| \frac{3 - x}{3 + x} \right| + c$$

$$\text{III. } \int \frac{1}{9 - x^2} dx = c \left) \frac{1}{3} \tan^{-1} \frac{x}{3} + c$$

$$\text{A. } \frac{1}{6} \log \left| \frac{3 - x}{3 + x} \right| + c$$

$$\text{B. } \frac{1}{3} \log \left| \frac{3 + x}{3 - x} \right| - c$$

$$\text{C. } \frac{1}{6} \log \left| \frac{3 + x}{3 - x} \right| + c$$

D. $\frac{1}{3} \log \left| \frac{3-x}{3+x} \right| + c$

Answer: C



Watch Video Solution

58. If $\int \frac{dx}{x^2 + 2x + 2} = f(x) + c$ then $f(x) =$

A. $\tan^{-1}(x+1)$

B. $2\tan^{-1}(x+1)$

C. $-\tan^{-1}(x+1)$

D. $3\tan^{-1}(x+1)$

Answer: A



Watch Video Solution

59. $\int \frac{1}{9x^2 + 16} dx =$

A. $\tan^{-1}\left(\frac{3x}{4}\right) + c$

B. $\frac{1}{12} \tan^{-1}\left(\frac{3x}{4}\right) + c$

C. $\frac{1}{2} \tan^{-1}\left(\frac{3x}{4}\right) + c$

D. $\frac{1}{4} \tan^{-1}\left(\frac{3x}{4}\right) + c$

Answer: B



Watch Video Solution

60. $\int \frac{\sin x}{\sqrt{3 + \sin^2 x}} dx =$

A. $\sin^{-1}\left(\frac{\cos x}{2}\right) + C$

B. $\frac{1}{2} \sin^{-1}\left(\frac{\cos x}{2}\right) + C$

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

D. $-\sin^{-1}\left(\frac{\cos x}{2}\right) + C$

Answer: D



Watch Video Solution

61. Evaluate the following integrals

$$\int \sqrt{x^2 + 4} \, dx$$

A. $\frac{x}{2}\sqrt{x^2 + 4} + 2\sinh^{-1}\left(\frac{x}{2}\right) + c$

B. $\frac{x}{4}\sqrt{x^2 + 4} + 2\sinh^{-1}\left(\frac{x}{4}\right) + c$

C. $\frac{x}{2}\sqrt{x^2 + 4} - 2\sinh^{-1}\left(\frac{x}{2}\right) + c$

D. $\frac{x}{2}\sqrt{x^2 + 4} + 2\sinh^{-1}\left(\frac{x}{4}\right) + c$

Answer: A



[Watch Video Solution](#)

62. $\int \sqrt{x^2 - 25} dx =$

A. $\frac{x}{2} \sqrt{x^2 - 25} - \frac{25}{2} \cosh^{-1} \left(\frac{x}{5} \right) + c$

B. $\frac{x}{2} \sqrt{x^2 - 25} + \frac{25}{2} \sinh^{-1} \left(\frac{x}{5} \right) + c$

C. $\frac{x}{3} \sqrt{x^2 - 25} + \frac{25}{2} \cosh^{-1} \left(\frac{x}{5} \right) + c$

D. $\frac{x}{3} \sqrt{x^2 - 25} - \frac{25}{2} \cosh^{-1} \left(\frac{x}{5} \right) + c$

Answer: A

[Watch Video Solution](#)

63. If $\int \frac{1}{x^2 - 13x + 42} dx = \log \left| \frac{x - a}{x - b} \right| + C$ then $a + b =$

A. 13

B. 1

C. -13

D. -1

Answer: A



View Text Solution

$$64. \int \frac{e^x}{(e^x + 2)(e^x - 1)} dx =$$



Watch Video Solution

$$65. \int \frac{\sin x}{\cos x(1 + \cos x)} dx = f(x) + c \Rightarrow f(x) =$$



Watch Video Solution

66. If $\int \frac{x^2 + 2}{(x^2 + 1)(x^2 + 4)} dx =$

$A \tan^{-1} x + B \tan^{-1} \frac{x}{2} + c$ then (A, B) =



Watch Video Solution

67. If $\int x^3 e^{-x} dx = -e^{-x} [ax^3 + bx^2 + cx + d] + K$ then (a, b, c, d) =



Watch Video Solution

68. If $\int x^3 e^x dx = e^K l + c$ then K, l =



View Text Solution

69. $\int e^{\log x} \cos x dx =$

A. $x \sin x - \cos x +$

B. $x\sin x + \cos x + c$

C. $x\cos x + \sin x$

D. $x\cos x - \sin x + c$

Answer: B

 **Watch Video Solution**

70. $\int x^2 \sin^2 x \, dx =$

A. $\frac{1}{6}x^3 + \frac{1}{2} \left[\frac{x^2 \sin 2x}{2} + \frac{x \cos 2x}{2} - \frac{\sin 2x}{2} \right] + c$

B. $\frac{1}{6}x^3 - \frac{1}{2} \left[-\frac{x^2 \sin 2x}{2} - \frac{x \cos 2x}{2} + \frac{\sin 2x}{2} \right] + c$

C. $-\frac{1}{6}x^3 + \frac{1}{2} \left[\frac{x^2 \sin 2x}{2} + \frac{x \cos 2x}{2} - \frac{\sin 2x}{2} \right] + c$

D. $\frac{1}{6}x^3 - \frac{1}{2} \left[\frac{x^2 \sin 2x}{2} + \frac{x \cos 2x}{2} - \frac{\sin 2x}{2} \right] + c$

Answer: D



Watch Video Solution

71. $\int x \sec^2 2x \, dx =$

A. $\frac{x}{2} \tan 2x - \frac{1}{4} \log |\cos 2x| + c$

B. $\frac{x}{2} \tan 2x - \frac{1}{2} \log |\cos 2x| + c$

C. $\frac{x}{2} \tan 2x + \frac{1}{2} \log |\cos 2x| + c$

D. $\frac{x}{2} \tan 2x + \frac{1}{4} \log |\cos 2x| + c$

Answer: D



Watch Video Solution

72. If $\int \log_{10} x \, dx = K \cdot x \log f(x) + c$ then $K \cdot f(x) =$

A. $\log_e 10, \frac{x}{e}$

B. $\log_{10} e, \frac{e}{x}$

C. $\log_2 10, \frac{x}{e}$

D. $\log_{10} e, \frac{x}{e}$

Answer: D



Watch Video Solution

73. $\int e^x [\sec x + \log (\sec x + \tan x)] dx =$

A. $e^x \sec x + c$

B. $e^x \log \sec x + c$

C. $e^x \log (\sec x + \tan x) + c$

D. $e^x \log \tan x + c$

Answer: C

[Watch Video Solution](#)

74. $\int e^{-x} \operatorname{cosec} x (\cot x + 1) dx =$

A. $e^{-x} \operatorname{cosec} x + c$

B. $e^x \operatorname{cosec} x + c$

C. $-e^{-x} \cot x + c$

D. $-e^{-x} \operatorname{cosec} x + c$

Answer: D

[Watch Video Solution](#)

75. Evaluate the integrals.

$$\int e^x \left(\frac{1 + x \log x}{x} \right) dx \text{ on } (0, \infty).$$

A. $\frac{e^x - \log x}{x} + c$

B. $e^x(1 + \log x) + c$

C. $e^x \cdot \log x + c$

D. $x \cdot e^x - \log x + c$

Answer: C



Watch Video Solution

76. $\int e^x (\tan x \tan^2 x) dx =$

A. $e^x \tan^2 x + c$

B. $e^x \sec^2 x + c$

C. $e^x \tan x + c$

D. $e^x (\tan x - 1) + c$

Answer: D



Watch Video Solution

77. $\int e^x (1 - \cot x + \cot^2 x) dx =$

A. $e^x \cot x + c$

B. $-e^x \cot x + c$

C. $e^{-x} \operatorname{cosec} x + c$

D. $e^x \operatorname{cosec} x + c$

Answer: B



Watch Video Solution

78. $\int (x + 1)^2 e^x dx =$

A. $xe^x + c$

B. $x^2 e^x + c$

C. $(x+1)e^x + c$

D. $(x^2 + 1)e^x + 1$

Answer: D



Watch Video Solution

79. If $I_n = \int \sin^n x dx$, then $nI_n - (n-1)I_{n-2} =$

A. $-\sin^{n-1} x \cos x$

B. $\cos^{n-1} x \sin x$

C. $\sin^{n-1} x \cos x$

D. $-\cos^{n-1} x \sin x$

Answer: A



Watch Video Solution

80. Evaluate the following integrals

$$\int \operatorname{cosec}^4 x dx$$

A. $\cot x + \frac{1}{3} \cot^3 x + \frac{2x}{3} + c$

B. $\cot x - \frac{1}{3} \cot^3 x + c$

C. $\cot x + \frac{1}{3} \cot^3 x + c$

D. $-\cot x - \frac{1}{3} \cot^3 x + c$

Answer: D



Watch Video Solution

81. If $I_n = \int \cos^n x dx$, then $6I_6 - 5I_4 =$

A. $\frac{6}{7} I_5$

B. $\frac{6}{7} I_6$

C. $\frac{5}{8} I_5$

D. $-\frac{5}{8}I_5$

Answer: A



Watch Video Solution

82. If $I_n = \int \cot^n x dx$ then $I_4 + I_6 =$

A. $-\frac{\cot^5 x}{5}$

B. $\cot^5 x$

C. $\frac{1}{5}\cot^5 x$

D. $-\frac{1}{5}\cot^5 x - \frac{1}{3}\cot^3 x$

Answer: A



Watch Video Solution

83. If $I_n = \int \frac{t^n}{1+t^2} dt$, then $I_{n-2} =$

A. $\frac{t^5}{5}$

B. $\frac{t^7}{7}$

C. $\frac{t^6}{6}$

D. $\frac{t^3}{3}$

Answer: A



Watch Video Solution

84. If $I_n = \int x^n e^{ax}$ then $I_n - \frac{x^n e^{ax}}{a} =$

A. $\frac{n}{a} I_{n-2}$

B. $\frac{n}{a} I_{n-1}$

C. $\frac{n}{a} I_{n-1}$

$$\text{D. } -\frac{n}{a}I_{n-1}$$

Answer: D



View Text Solution

EXERCISE -II

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

$$\text{A. } \frac{x^5}{5} + \frac{x^3}{3} + x + c$$

$$\text{B. } \frac{x^3}{3} - \frac{x^2}{2} + x + c$$

$$\text{C. } \frac{x^3}{3} - \frac{x^2}{2} + c$$

$$\text{D. } \frac{x^3}{3} + \frac{x^2}{2} + x + c$$

Answer: D



View Text Solution

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

A. $\frac{x^3}{3} - x + \tan^{-1} x + c$

B. $\frac{x^5}{5} + \tan^{-1} x + c$

C. $4x^3 + \tan^{-1} x + c$

D. $\frac{x^4}{4} - x + \tan^{-1} x + c$

Answer: A



Watch Video Solution

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

A. $\frac{x^4}{4} + \frac{x^3}{3} - \tan^{-1} x + c$

B. $\frac{x^4}{4} - \frac{x^2}{2} + \frac{1}{2} \log(x^2 + 1) + c$

C. $\frac{x^4}{4} + \frac{x^3}{3} + \tan^{-1} x + c$

D. $\frac{x^4}{4} + \frac{x^3}{5} - \tan^{-1} x + c$

Answer: B



Watch Video Solution

4. If $\int \frac{x^4 + 1}{x^6 + 1} dx = A \tan^{-1} x + B \tan^{-1} x^3 + c$, then (A,B) =

A. $\tan^{-1} x - \tan^{-1} x^3 + c$

B. $\tan^{-1} x - \frac{1}{3} \tan^{-1} (x^3) + c$

C. $\tan^{-1} x + \tan^{-1} (x^3) + c$

D. $\tan^{-1} x + \frac{1}{3} \tan^{-1} (x^3) + c$

Answer: D



Watch Video Solution

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

A. $x^x \log x + c$

B. $e^x + c$

C. $x^x + c$

D. $x^{x-1} + c$

Answer: C



Watch Video Solution

6. If $x \in (-\pi/2, \pi/2)$ then $\int \sqrt{1 + \cos 2x} dx =$

A. $2\sqrt{2} \sin x + c$

B. $\sqrt{3} \sin x + c$

C. $\sqrt{2} \sin x + c$

D. $3\sqrt{2} \sin x + c$

Answer: C



Watch Video Solution

7. The indefinite integral of $2 \sin x$ w.r.t $\cos x$ is

A. $\cos x - x + c$

B. $\sin x + x + c$

C. $-\frac{1}{2} \sin 2x - x + c$

D. $\frac{1}{2} \cos 2x + x + c$

Answer: C



Watch Video Solution

8. $\int (1 + 2)\tan x (\tan x + \sec x)^{1/2} dx =$

A. $\log | \sec x (\sec x - \tan x) | + c$

B. $\log | \sec x (\sec x + \tan x) | + c$

C. $\log \left| \frac{\sec x}{\sec x + \tan x} \right| + c$

D. $\log | \cos x (\sec x \tan x) | + c$

Answer: B



Watch Video Solution

9. If $[.]$ denotes greatest integer function and x

$\in \left(\frac{2}{3}, 1 \right)$ and $\int \frac{[5 - 3x]}{x - 2} dx = k \log | x - 2 | + c$ then $K =$

A. 1

B. 2

C. 3

D. 4

Answer: B



View Text Solution

10. If $2 < x < 3$ then

$$\int (|x - 1| + |x - 2| + |x - 3|) dx =$$

A. $-\frac{x^2}{2} + c$

B. $x + c$

C. $\frac{x^2}{2} + c$

D. $-x + c$

Answer: C



View Text Solution

11. If $\int \frac{2x^2 + a^2}{x^2(x^2 + a^2)} dx = \frac{k}{x} + \frac{1}{a} \tan^{-1} \frac{x}{a} + c$ Then k=

A. 0

B. - 1

C. 1

D. $\frac{1}{a}$

Answer: B



Watch Video Solution

12. If $\int \frac{6x + 7}{(x + 2)^2} dx = A \ln |x+2| + \frac{B}{x+2} + c$ then (A,B) =

A. $\left(6, \frac{1}{5}\right)$

B. (- 6, -5)

C. $\left(\frac{1}{6}, 5\right)$

D. (6, 5)

Answer: D



Watch Video Solution

13. $\int x^2 \sin(x^3) dx$

A. $\frac{1}{3} \left[x^3 \psi(x^3) - \int x^3 \psi(x^3) dx \right] + C$

B. $\frac{1}{3} x^3 \psi(x^3) - 3 \int x^3 \psi(x^3) dx + C$

C. $\frac{1}{3} x^3 \psi(x^3) - \int x^3 \psi(x^3) dx + C$

D. $\frac{1}{3} \left[x^3 \psi(x^3) - \int x^3 \psi(x^3) dx + C \right]$

Answer: C



Watch Video Solution

14. $\int \frac{1}{4\sqrt{(x-1)^3(x+2)^5}} dx =$

A. $\frac{4}{3} \left(\frac{x-1}{x+2} \right)^{\frac{1}{4}} + C$

B. $-\frac{4}{3} \left(\frac{x-1}{x+2} \right)^{\frac{1}{4}} + C$

C. $\frac{4}{3} \left(\frac{x+2}{x-1} \right)^{\frac{1}{4}} + C$

D. $-\frac{4}{3} \left(\frac{x-1}{x+2} \right)^{\frac{1}{4}} + C$

Answer: A



View Text Solution

15. $\int \frac{1}{\log(x^x)(\log x + 1)} dx =$

A. $\log |\log x + 1| + c$

B. $\log \left| \frac{\log x + 1}{\log x} \right| + c$

C. $\log \left| \frac{\log x}{\log x + 1} \right| + c$

D. $\log |\log x - 1| + c$

Answer: C



Watch Video Solution

16. $\int \frac{dx}{x(\log x - 2)(\log x - 3)} = I + c \Rightarrow I =$

A. $\frac{1}{x} \log \left| \frac{\log x - 3}{\log x - 2} \right|$

B. $\log \left| \frac{\log x - 3}{\log x - 2} \right|$

C. $\log \left| \frac{\log x - 2}{\log x - 3} \right|$

D. $\log |(\log x - 3)(\log x - 2)|$

Answer: B



View Text Solution

17. If $l^r(x)$ means $\log \log \log \dots (x)$, the 'log' being repeated 'r' times, then

$$\int \frac{1}{x l(x) l^2(x) l^3(x) \dots l^r(x)} dx =$$

A. $l^r(x) + c$

B. $l^{r+1}(x) + c$

C. $\frac{l^{r+1}(x)}{r+1}$

D. $\frac{l^r(x)}{r} + c$

Answer: B

 [View Text Solution](#)

18. $\int \frac{x}{(1-x)^n} dx =$

A. $\frac{(1-x)^{2-n}}{2-n} + \frac{(1-x)^{1-n}}{1-n} + c$

B. $\frac{(1-x)^{2+n}}{2+n} - \frac{(1-x)^{1+n}}{2+n} + c$

$$\text{C. } \frac{(1-x)^{2-n}}{2-n} - \frac{(1-x)^{1+n}}{1-n} + c$$

$$\text{D. } \frac{(1-x)^{2-n}}{2+n} + \frac{(1-x)^{1-n}}{1+n} + c$$

Answer: C



View Text Solution

$$19. \int \sin^2 x \cos^2 x \, dx =$$

$$\text{A. } \frac{1}{2} \left(x - \frac{\sin 4x}{4} \right) + c$$

$$\text{B. } \frac{1}{8} \left(x - \frac{\sin 4x}{4} \right) + c$$

$$\text{C. } \frac{1}{8} \left(x + \frac{\sin 4x}{4} \right) + c$$

$$\text{D. } \frac{1}{2} \left(x + \frac{\sin 4x}{4} \right) + c$$

Answer: B



Watch Video Solution

20. If $\int (\sin 2x - \cos 2x) dx = \frac{1}{\sqrt{2}} \sin(2x - a) + c$ then $a =$

A. $a = \frac{\pi}{4}, b \in R$

B. $a = \frac{-\pi}{4}, b \in R$

C. $a = \frac{5\pi}{4}, b \in R$

D. $a = \frac{-5\pi}{4}, b \in R$

Answer: D



Watch Video Solution

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

A. $\frac{1}{8} \left[3x + 2\sin 2x - \frac{1}{2}\sin 4x \right] + c$

B. $\frac{1}{8} \left[3x - 2\sin 2x + \frac{1}{4}\sin 4x \right] + c$

C. $\frac{1}{8} \left[3x - 2\sin 2x - \frac{1}{4}\sin 4x \right] + c$

$$D. \frac{1}{8} \left[3x + 2\sin 2x + \frac{1}{4}\sin 4x \right] + c$$

Answer: B



Watch Video Solution

$$22. \int \cos x \cos 2x \cos 3x dx =$$

$$A. \frac{1}{4} \left[\frac{1}{6}\sin 6x + \frac{1}{2}\sin 2x - \frac{1}{4}\sin 4x + x \right] + c$$

$$B. \frac{1}{4} \left[\frac{1}{6}\sin 6x - \frac{1}{2}\sin 2x - \frac{1}{4}\sin 4x - x \right] + c$$

$$C. \frac{1}{4} \left[\frac{1}{6}\sin 6x + \frac{1}{2}\sin 2x + \frac{1}{4}\sin 4x + x \right] + c$$

$$D. \frac{1}{6} \sin 6x + c$$

Answer: C



Watch Video Solution

23. If $\int \frac{\sin^8 x - \cos^8 x}{1 - 2\sin^2 x \cos^2 x} dx = A \sin 2x + B$, then $A =$

A. $-\frac{1}{2}$

B. -1

C. $\frac{1}{2}$

D. 1

Answer: A



Watch Video Solution

24. $\int \frac{\sin x}{\cos 3x \cdot \cos 2x} dx =$

A. $\frac{1}{3} \log \cos 3x + \frac{1}{2} \log \cos 2x + c$

B. $\frac{1}{3} \log |\sec 3x| + \frac{1}{2} \log |\sec 2x| + c$

C. $\frac{1}{3} \log |\tan 3x| - \frac{1}{2} \log |\tan 2x| + c$

D. none

Answer: B



Watch Video Solution

25. If $\int \frac{\sin x}{\sin(x - \alpha)} dx = Ax + B \log \sin(x - \alpha) + C$, then value of (A,B)

A. $\sin \alpha, \cos \alpha$

B. $-\cos, \alpha, \sin \alpha$

C. $-\sin \alpha, \cos \alpha$

D. $\cos \alpha, \sin \alpha$

Answer: D



Watch Video Solution

26. $\int \frac{\cos(x - a)}{\cos(x - b)} dx =$

A. $\cos(b - a) - \sin(b - a) \log |\sec(x - b)| + c$

B. $x \cos(b - a) + \sin(b - a) \log |\sec(x - b)| + c$

C. $x \cos(b + a) - \sin(b + a) \log |\sec(x + b)| + c$

D. $x \cos(b + a) - \sin(b + a) \log |\sec(x - b)| + c$

Answer: A



View Text Solution

27. $\int \frac{1}{\sin(x - a)\sin(x - b)} dx =$

A. $\sin(a - b)$

B. $\sin(b - a)$

C. $\operatorname{cosec}(b - a)$

D. cosec (a - b)

Answer: C



Watch Video Solution

28. $\int \sin^{5/2} x \cos^3 x dx =$

A. $2\sin^{7/2} x \left(\frac{1}{7} + \frac{1}{11} \sin^2 x \right) + c$

B. $2\sin^{7/2} x \left(\frac{1}{7} - \frac{1}{11} \sin^2 x \right) + c$

C. $3\sin^{7/2} x \left(\frac{1}{5} - \frac{1}{9} \sin^2 x \right) + c$

D. $3\sin^{7/2} x \left(\frac{1}{7} - \frac{1}{11} \sin^2 x \right) + c$

Answer: B



Watch Video Solution

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

A. $\tan^{-1}(\sin x) + c$

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

C. $\frac{1}{2} \tan^{-1}(\tan^2 x) + c$

D. $\frac{1}{2} \tan^{-1}(\cot^2 x) + c$

Answer: C



Watch Video Solution

30. $\int \frac{a + b \sin x}{(b + a \sin x)^2} dx =$

A. $\frac{-\cos x}{b + a \sin x} + c$

B. $\frac{\cos x}{b + a \sin x} + c$

C. $\frac{\sin x}{b + a \sin x} + c$

D. $\frac{-\sin x}{b + a \sin x} + c$

Answer: A



Watch Video Solution

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

A. $\tan \sqrt{1-x^2} + c$

B. $-\tan \sqrt{1-x^2} + c$

C. $\cot \sqrt{1-x^2} + c$

D. $-\cot \sqrt{1-x^2} + c$

Answer: B



Watch Video Solution

$$32. \int \frac{\sec x}{(\sec x + \tan x)^2} dx =$$

$$A. \frac{-1}{2(\sec x + \tan x)^2} + c$$

$$B. \frac{1}{(\sec x + \tan x)^2} + c$$

$$C. \frac{1}{2(\sec x - \tan x)^2} + c$$

$$D. \frac{1}{2(\sec x + \tan x)^2} + c$$

Answer: A



Watch Video Solution

$$33. \int \frac{\sec^2 x}{(\sec x + \tan x)^5} dx =$$

$$A. \frac{1}{4(\sec x + \tan x)^4} \left[\frac{1}{2} - \frac{1}{3(\sec x + \tan x)^2} \right] + C$$

$$B. \frac{-1}{4(\sec x + \tan x)^4} \left[\frac{1}{2} + \frac{1}{3(\sec x + \tan x)^2} \right] + C$$

$$C. \frac{-1}{4(\sec x + \tan x)^4} \left[\frac{1}{3} + \frac{1}{3(\sec x - \tan x)^2} \right] + C$$

$$D. \frac{1}{4(\sec x + \tan x)^4} \left[\frac{1}{3} - \frac{1}{3(\sec x - \tan x)^2} \right] + C$$

Answer: B



Watch Video Solution

$$34. \int \frac{1}{\cos x \sqrt{\sin x \cos x}} dx =$$

$$A. \sqrt{\tan x} + c$$

$$B. 2\sqrt{\tan x} + c$$

$$C. 2\sqrt{\cot x} + c$$

$$D. \sqrt{\cot x} + c$$

Answer: B



Watch Video Solution

$$35. \int \frac{\sqrt{\cot x}}{\sin x \cos x} dx = -f(x) + c \Rightarrow f(x) =$$

A. $2\sqrt{\tan x}$

B. $-2\sqrt{\tan x}$

C. $-2\sqrt{\cot x}$

D. $2\sqrt{\cot x}$

Answer: D



Watch Video Solution

$$36. \int \frac{1}{\sqrt{\sin^2 x \cos^2 x - \sin^4 x}} dx =$$

A. $-\cos^{-1}(\cot x) + C$

B. $-\cosh^{-1}(\cot x) + C$

C. $\cosh^{-1}(\cot x) + C$

D. $\cos^{-1}(\cot x) + C$

Answer: B



Watch Video Solution

37. $\int \frac{\cos x + x \sin x}{x(x + \cos x)} dx =$

A. $\log \left| \frac{x + \cos x}{x} \right| + c$

B. $\log |x(x + \cos x)| + c$

C. $\log \left| \frac{x}{x + \cos x} \right| + c$

D. $\log |x(\cos x + x \sin x)| + c$

Answer: C



Watch Video Solution

38. $\int \frac{\cos x - \sin x}{\sqrt{8 - \sin 2x}} dx =$

A. $\sin^{-1} \left(\frac{\sin x + \cos x}{2} \right) + c$

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

C. $\sin^{-1} \left(\frac{\sin x + \cos x}{4} \right) + c$

D. $\sin^{-1} (\sin x + \cos x) + c$

Answer: B



Watch Video Solution

39. $\int (\sqrt{\tan x} + \sqrt{\cot x}) dx =$

A. $\sqrt{2} \sin^{-1} (\sin x + \cos x) + c$

B. $\sqrt{2} \cos^{-1} (\sin x + \cos x) + c$

C. $\sqrt{2} \cos^{-1} (\sin x - \cos x) + c$

D. $\sqrt{2}\sin^{-1}(\sin x - \cos x) + c$

Answer: D



Watch Video Solution

40. Evaluate the integrals.

$$\int \sqrt{x + \sec x} dx$$

on $\left[\left(2n - \frac{1}{2} \right) \pi, \left(2n + \frac{1}{2} \right) \pi \right], (n \in \mathbb{Z})$.

A. $2\tan^{-1}(\sqrt{\sec x - 1}) + c$

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

C. $2\tanh^{-1}(\sqrt{\sec x - 1}) + c$

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

Answer: A



Watch Video Solution

41. If $\int \frac{1}{x\sqrt{1-x^3}} dx = a \log \left| \frac{\sqrt{1-x^3}-1}{\sqrt{1-x^3}+1} \right| + b$ then $a =$

A. $\frac{2}{3}$

B. $\frac{1}{3}$

C. $-\frac{2}{3}$

D. $-\frac{1}{3}$

Answer: B



Watch Video Solution

42. $\int 5^{5^{5^x}} \cdot 5^{5^x} \cdot 5^x dx =$

A. $\frac{5^{5x}}{(\log 5)^3} + c$

B. $5^{5x}(\log 5)^3 + c$

C. $5^x(\log 5)^3 + c$

D. $\frac{5^{5x}}{(\log 5)^3} + c$

Answer: D

 **Watch Video Solution**

43. $\int \frac{1}{(1 + e^x)(1 + e^{-x})} dx =$

A. $\frac{-1}{1 + e^x} + c$

B. $\frac{1}{1 + e^x} + c$

C. $\frac{-2}{1 + e^x} + c$

D. $\frac{1}{1 - e^x} + c$

Answer: A

 **Watch Video Solution**

44. $\int \frac{1}{\sqrt{e^{2x} - 1}} dx =$

A. $-\tan^{-1}(e^{-x}) + c$

B. $\sin^{-1}(e^{-x}) + c$

C. $-\sin^{-1}(e^{-x}) + c$

D. $\tan^{-1}(e^{-x}) + c$

Answer: C



Watch Video Solution

45. $\int e^x \operatorname{cosec} x \left[\frac{\sin x - x \cos x}{\sin^2 x} \right] dx =$

A. $e^x \cdot \operatorname{cosec} x + C$

B. $e^x \operatorname{cosec} x + C$

C. $e^x \operatorname{cosec} x + C$

D. $e^{x \sin x} + C$

Answer: B



View Text Solution

46. $\int \frac{\tan^9 x}{\sin x \cos x} dx =$

A. $\frac{1}{10} \tan^9 x + c$

B. $\frac{1}{5} \tan^9 x + c$

C. $\frac{1}{9} \tan^9 x + c$

D. $\frac{1}{9} \cot^9 x + c$

Answer: C



Watch Video Solution

$$47. \int_{1/3}^1 \frac{(x - x^3)^{1/3}}{x^4} dx =$$

$$A. \frac{3}{8} \left(\frac{1}{x^2} - 1 \right)^{4/3} + C$$

$$B. \frac{-3}{8} \left(\frac{1}{x^2} - 1 \right)^{4/3} + C$$

$$C. \frac{3}{8} \left(1 + \frac{1}{x^2} \right)^{4/3} + C$$

$$D. \frac{-3}{8} \left(1 + \frac{1}{x^2} \right)^{4/3} + C$$

Answer: B



Watch Video Solution

$$48. \int \frac{1}{x^4 \sqrt{x^4 + 1}} dx =$$

$$A. \frac{1}{3} \left(1 + \frac{1}{x^4} \right)^{3/4} + C$$

B. $\frac{-1}{3} \left(1 + \frac{1}{x^4} \right)^{3/4} + C$

C. $\frac{2}{3} \left(1 + \frac{1}{x^4} \right)^{3/4} + C$

D. $\frac{-2}{3} \left(1 + \frac{1}{x^4} \right)^{3/4} + C$

Answer: B



View Text Solution

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

A. $\frac{1}{4} \left(\frac{\sqrt{4 - x^2}}{x} \right) + c$

B. $\frac{1}{2} \left(\frac{\sqrt{4 - x^2}}{x} \right) + c$

C. $-\frac{1}{2} \left(\frac{\sqrt{4 - x^2}}{x} \right) + c$

D. $-\frac{1}{2} \left(\frac{\sqrt{4-x^2}}{x} \right) + c$

Answer: C



View Text Solution

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

A. 1

B. $1/2$

C. $-1/2$

D. -1

Answer: D



Watch Video Solution

51. $\int \frac{1}{(16 + x^2)^{3/2}} dx =$

A. $\frac{1}{16} \cdot \frac{x}{\sqrt{16 + x^2}} + C$

B. $-\frac{1}{16} \cdot \frac{x}{\sqrt{16 + x^2}} + C$

C. $\frac{1}{16} \cdot \frac{1}{\sqrt{16 + x^2}} + C$

D. $-\frac{1}{16} \cdot \frac{1}{\sqrt{16 + x^2}} + C$

Answer: A



Watch Video Solution

52. $\int \frac{1}{(x^2 - 25)^{3/2}} dx =$

A. $\frac{1}{25} \cdot \frac{1}{\sqrt{x^2 - 25}} + C$

B. $-\frac{1}{25} \cdot \frac{x}{\sqrt{x^2 - 25}} + C$

C. $\frac{1}{25} \cdot \frac{1}{\sqrt{x^2 - 25}} + C$

D. $-\frac{1}{25} \cdot \frac{1}{\sqrt{x^2 - 25}} + C$

Answer: B

 **Watch Video Solution**

53. $\int \sin(\tan^{-1}x) \, dx =$

A. $\frac{1}{\sqrt{x + x^3}} + C$

B. $\frac{1}{\sqrt{1 - x^2}} + C$

C. $\sqrt{1 + x^2} + C$

D. $\sqrt{1 - x^2} + C$

Answer: C

 **Watch Video Solution**

54. $\int \frac{dx}{x^{1/5} (1 + x^{4/5})^{1/2}} =$

A. $\sqrt{1 + x^{4/5}} + c$

B. $\frac{5}{2} \sqrt{1 + x^{4/5}} + c$

C. $x^{4/5} \sqrt{1 + x^{4/5}} + c$

D. $\frac{2}{3} \sqrt{1 + x^{4/5}} + c$

Answer: B



Watch Video Solution

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

A. $\frac{1}{b + a} \log |a \cos^2 x + b \sin^2 x| + c$

B. $\frac{1}{b - a} \log |a \cos^2 x - b \sin^2 x| + C$

C. $\frac{1}{b - a} \log |a \cos^2 x + b \sin^2 x| + C$

D. $\frac{1}{a+b} \log \left| a \cos^2 x - b \sin^2 x \right| + C$

Answer: C



Watch Video Solution

56. If $\frac{(x-1)^2}{(x^2+1)^2} dx = \tan^{-1} x + g(x) + c$ then $g(x) =$

A. $\tan^{-1} \frac{x}{2}$

B. $\frac{1}{x^2+1}$

C. $\frac{-2}{x^2+1}$

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

Answer: B



Watch Video Solution

$$57. \int \left[\frac{\sqrt{x}}{\sqrt{a^3 - x^3}} \right] dx = g(x) + c \Rightarrow g(x) =$$

A. $\frac{2}{3} \cos^{-1} x$

B. $\frac{2}{3} \sin^{-1} \left(\frac{x^3}{a^3} \right)$

C. $\frac{2}{3} \sin^{-1} \left(\sqrt{\frac{x^3}{a^3}} \right)$

D. $\frac{2}{3} \cos^{-1} \left(\frac{x}{a} \right)$

Answer: C



Watch Video Solution

$$58. \int \sqrt{\frac{\cos x - \cos^3 x}{1 - \cos^3 x}} dx =$$

A. $\frac{-2}{3} \sin^{-1} \left[(\cos x)^{3/2} \right] + c$

B. $\frac{2}{3} \sin^{-1} \left[(\cos x)^{3/2} \right] + c$

C. $-\frac{1}{3} \sin^{-1} \left[(\cos x)^{3/2} \right] + c$

D. $\frac{1}{3} \sin^{-1} \left[(\sin x)^{3/2} \right] + c$

Answer: A



Watch Video Solution

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

A. $\log \left| \frac{x - 1}{x + 1} \right| + c$

B. $\log \left| \frac{x + 1}{2x - 1} \right| + c$

C. $\log \left| \frac{x - 1}{2x - 1} \right| + c$

D. $\log \left| \frac{2x - 2}{2x + 1} \right| + c$

Answer: D



Watch Video Solution

60. If $\alpha > 1$, then $\int \frac{dx}{x^2 + 2\alpha x + 1} =$

A. $\frac{1}{\sqrt{1 - \alpha^2}} \tan^{-1} \left(\frac{x + \alpha}{\sqrt{1 - \alpha^2}} \right) + c$

B. $\frac{1}{\sqrt{1 - \alpha^2}} \cot^{-1} \left(\frac{x + \alpha}{\sqrt{1 - \alpha^2}} \right) + c$

C. $\frac{1}{2\sqrt{\alpha^2 - 1}} \log \left(\frac{x + \alpha - \sqrt{\alpha^2 - 1}}{x + \alpha + \sqrt{\alpha^2 - 1}} \right) + c$

D. $\frac{1}{2\sqrt{\alpha^2 - 1}} \log \left(\frac{x + \alpha + \sqrt{\alpha^2 - 1}}{x + \alpha - \sqrt{\alpha^2 - 1}} \right) + c$

Answer: C



View Text Solution

61. $\int \frac{dx}{x \left[6(\log x)^2 + 7\log x + 2 \right]} =$

A. $\log \left| \frac{6\log x + 3}{6\log x + 4} \right| + c$

B. $-\log \left| \frac{3\log x + 2}{\log x + 4} \right| + c$

C. $\left| \frac{3x + 2}{2 - 3} \right| + c$

D. $-\log \left| \frac{6\log x + 3}{6\log x + 4} \right| + c$

Answer: A



View Text Solution

62. $\int \frac{e^{3x} + e^x}{e^{4x} - e^{2x} + 1} dx =$

A. $\frac{1}{4} \log(e^{4x} - e^{2x} + 1) + C$

B. $\tan^{-1}(e^x - e^{-x}) + C$

C. $\tan^{-1}(e^x - e^{-x}) + C$

D. $\tan^{-1}(e^{-x} - e^x) + C$

Answer: B



View Text Solution

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

A. $\frac{1}{\sqrt{2}} \sin^{-1} \left[\frac{\sqrt{2}(x+1)}{\sqrt{7}} \right] + c$

B. $\frac{1}{\sqrt{2}} \sin^{-1} \left[\frac{(x+1)}{\sqrt{7}} \right] + c$

C. $\sin^{-1} \left[\frac{\sqrt{2}(x+1)}{\sqrt{7}} \right] + c$

D. $\frac{1}{\sqrt{2}} \cos^{-1} \left[\frac{\sqrt{2}(x+1)}{\sqrt{7}} \right] + c$

Answer: A



Watch Video Solution

64. $\int \sqrt{1 - 2x - x^2} \, dx =$

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

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

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

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

Answer: A



View Text Solution

65. $\int x^2 \sqrt{x^6 - 1} dx =$

A. $\frac{1}{6} \left\{ x^2 \sqrt{x^6 - 1} - \log \left(x^3 + \sqrt{x^6 - 1} \right) \right\} + c$

B. $\frac{1}{6} \left\{ x^2 \sqrt{x^6 - 1} + \log \left(x^3 + \sqrt{x^6 - 1} \right) \right\} + c$

C. $\frac{1}{6} \left\{ x^3 \sqrt{x^6 - 1} - \sin^{-1} \left(x^3 \right) \right\} + c$

D. $\frac{1}{6} \left\{ x^3 \sqrt{x^6 - 1} + \sinh^{-1} \left(x^3 \right) \right\} + c$

Answer: A

[Watch Video Solution](#)

66. $\int \frac{dx}{x(x^n + 1)} = c$

A. $\frac{1}{n} \log \left| \frac{x^n}{x^n + 1} \right| + C$

B. $\frac{1}{n} \log \left| \frac{x^n + 1}{x^n} \right| + C$

C.

D.

Answer: A

[View Text Solution](#)

67. If $\int \frac{1}{x(x^5 - 1)(x^5 + 1)} dx =$

$A \log x^5 + B \log (x^5 - 1) + C \log (x^5 + 1)$ then $(A, B, C) =$

A. $\left(\frac{-1}{5}, \frac{1}{10}, \frac{1}{10}\right)$

B. $\left(-\frac{5}{4}, \frac{1}{8}, -\frac{1}{8}\right)$

C. $\left(-\frac{5}{4}, -\frac{1}{8}, \frac{1}{8}\right)$

D. $\left(1, \frac{1}{10}, -\frac{1}{10}\right)$

Answer: A



View Text Solution

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

A. $\tan^{-1} x + \log |x - 1| + c$

B. $-\tan^{-1} x - \log |x - 1| + c$

C. $\tan^{-1} x - \log |x - 1|$

D. none

Answer: A



View Text Solution

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

A. $\log \left| \frac{1+xe^x}{xe^x} \right| + c$

B. $\log \left| \frac{xe^x}{1+xe^x} \right| + c$

C. $\log \left| xe^x(1+xe^x) \right| + c$

D. $\log \left| 1+xe^x \right| + c$

Answer: B



Watch Video Solution

$$70. \int \frac{\sin x \cdot \cos x}{\cos^2 x + 3\cos x + 2} dx =$$

$$\text{A. } \log \frac{(\cos x + 2)^2}{|\cos x + 1|} + c$$

$$\text{B. } \log \left| \frac{\cos x + 2}{\cos x + 1} \right| + c$$

$$\text{C. } \log \frac{|1 + \cos x|}{(2 + \cos x)^2} + c$$

$$\text{D. } \log \left| \frac{1 + \cos x}{2 + \cos x} \right| + c$$

Answer: C



Watch Video Solution

$$71. \int \frac{\cot x}{1 + \sin^2 x} dx =$$

$$\text{A. } \log \left| \frac{\sin x}{\sqrt{1 + \sin^2 x}} \right| + C$$

$$\text{B. } \log \left| \frac{\sqrt{1 + \sin^2 x}}{\sin x} \right| + c$$

$$\text{C. } \frac{1}{2} \log \left| \frac{\sin x}{\sqrt{1 + \sin^2 x}} \right| + C$$

$$\text{D. } \frac{1}{2} \log \left| \frac{\sqrt{1 + \sin^2 x}}{\sin x} \right| + c$$

Answer: A



Watch Video Solution

$$72. \int \frac{2x + 3}{\sqrt{4x + 3}} dx =$$

$$\text{A. } \frac{1}{12} (4x - 3)^{\frac{3}{2}} + \frac{1}{4} \sqrt{4x + 3} + c$$

$$\text{B. } \frac{1}{12} (4x + 3)^{\frac{3}{2}} + \frac{3}{4} \sqrt{4x + 3} + c$$

$$\text{C. } \frac{1}{12} (4x + 3)^{\frac{3}{2}} + \frac{3}{4} \sqrt{4x - 3} + c$$

$$\text{D. } \frac{1}{12} (4x + 3)^{\frac{3}{2}} - \frac{1}{4} \sqrt{4x - 3} + c$$

Answer: B



Watch Video Solution

73. If $\int \frac{1}{(x+100)\sqrt{x+99}} dx = f(x) + c$ then $f(x) =$

A. $2(x+100)^{1/2}$

B. $3(x+100)^{1/2}$

C. $2\tan^{-1}\sqrt{x+99}$

D. $2\tan^{-1}\sqrt{x+100}$

Answer: C

 **Watch Video Solution**

74. $\int \frac{1}{\sqrt{x}(x+9)} dx =$

A. $\frac{2}{3}\tan^{-1}(\sqrt{x}) + c$

B. $\frac{2}{3}\tan^{-1}\left(\frac{\sqrt{x}}{3}\right) + c$

C. $3\tan^{-1}\sqrt{x} + c$

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

Answer: B



Watch Video Solution

75. $\int \frac{3x + 4}{x^2 + 2x + 3} dx =$

A. $\frac{3}{2} \log|x^2 + 2x + 3| + \frac{1}{\sqrt{2}} \tan^{-1}\left(\frac{x+1}{\sqrt{2}}\right) + c$

B. $\frac{3}{2} \log|x^2 + 2x + 3| - \frac{1}{\sqrt{2}} \tan^{-1}\left(\frac{x+1}{\sqrt{2}}\right) + c$

C. $\frac{3}{2} \log|x^2 + 2x + 3| - \frac{1}{\sqrt{2}} \sin^{-1}\left(\frac{x+1}{\sqrt{2}}\right) + c$

D. $\frac{3}{2} \log|x^2 + 2x + 3| + \frac{1}{\sqrt{2}} \sin^{-1}\left(\frac{x+1}{\sqrt{2}}\right) + c$

Answer: A



Watch Video Solution

76. $\int \sqrt{\frac{x-1}{x-2}} dx =$

A. $\sqrt{x^2 - 3x + 2} + \frac{1}{2} \cosh^{-1}(2x - 3) + C$

B. $\sqrt{x^2 - 3x + 2} - \frac{1}{2} \cosh^{-1}(2x - 3) + C$

C. $\sqrt{x^2 - 3x + 2} + \frac{1}{2} \cosh^{-1}(2x + 3) + C$

D. $\sqrt{x^2 - 3x + 2} - \frac{1}{2} \cosh^{-1}(2x + 3) + C$

Answer: A



Watch Video Solution

77. $\int \frac{1}{(2x+1)\sqrt{x^2-x-6}} dx =$

A. $-\frac{1}{\sqrt{5}} \tan^{-1} \left(\frac{4x+7}{6x+3} \right) + c$

$$\text{B. } -\frac{1}{\sqrt{5}}\sin^{-1}\left(\frac{4x-7}{6x-3}\right) + c$$

$$\text{C. } -\frac{1}{\sqrt{5}}\cos^{-1}\left(\frac{4x+7}{6x+3}\right) + c$$

$$\text{D. } -\frac{1}{\sqrt{5}}\sin^{-1}\left(\frac{4x+7}{6x+3}\right) + c$$

Answer: D



View Text Solution

$$78. \int \frac{1}{(1+x^2)\sqrt{1-x^2}} dx =$$

$$\text{A. } \frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{\sqrt{2x}}{\sqrt{1-x^2}}\right) + C$$

$$\text{B. } \frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{\sqrt{2x}}{\sqrt{1+x^2}}\right) + C$$

$$\text{C. } \frac{1}{2}\tan^{-1}\left(\frac{\sqrt{2x}}{\sqrt{1-x^2}}\right) + C$$

$$\text{D. } \frac{1}{2} \tan^{-1} \left(\frac{\sqrt{2x}}{\sqrt{1+x^2}} \right) + C$$

Answer: A



Watch Video Solution

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

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

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

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

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

Answer: A



Watch Video Solution

80. If $\int \frac{x^2 + 4}{x^4 + 16} dx = \frac{1}{k} \tan^{-1} \left(\frac{x^2 - 4}{kx} \right) + C$ then $k =$

A. $\sqrt{2}$

B. $4\sqrt{2}$

C. $2\sqrt{2}$

D. 2

Answer: C



View Text Solution

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

A. $\frac{1}{2\sqrt{2}} \log \left| \frac{x^2 - \sqrt{2}x + 1}{x^2 + \sqrt{2}x + 1} \right| + c$

$$\text{B. } \frac{1}{\sqrt{2}} \log \left| \frac{x^2 - \sqrt{2}x + 1}{x^2 + \sqrt{2}x + 1} \right| + c$$

$$\text{C. } \frac{1}{2\sqrt{2}} \log \left| \frac{x^2 + \sqrt{2}x + 1}{x^2 - \sqrt{2}x + 1} \right| + c$$

$$\text{D. } \frac{1}{2\sqrt{2}} \log \left| \frac{x^2 - \sqrt{2}x - 1}{x^2 - \sqrt{2}x + 1} \right| + c$$

Answer: A



Watch Video Solution

$$82. \int \frac{x^2 + 1}{x^4 + x^2 + 1} dx =$$

$$\text{A. } -\frac{1}{\sqrt{3}} \tan^{-1} \left(\frac{x^2 - 1}{\sqrt{3}x} \right) + c$$

$$\text{B. } \frac{1}{\sqrt{3}} \tan^{-1} \left(\frac{\sqrt{3}x}{x^2 + 1} \right) + c$$

$$\text{C. } \frac{1}{\sqrt{2}} \tan^{-1} \left(\frac{x^2 - 1}{\sqrt{3}x} \right) + c$$

D. $\frac{1}{\sqrt{3}} \tan^{-1} \left(\frac{x^2 - 1}{\sqrt{3}x} \right) + c$

Answer: D



Watch Video Solution

83. If $\int \frac{1}{4 + 5\sin x} dx = \frac{1}{3} \log |f(x)| + c$ then $f(x) =$

A. $\frac{2\tan \frac{x}{2} - 1}{\tan \frac{x}{2} + 2}$

B. $\frac{2 + \tan \frac{x}{2}}{2 - \tan \frac{x}{2}}$

C. $\frac{2\tan \frac{x}{2} + 1}{2 \left(\tan \frac{x}{2} + 2 \right)}$

D. $\frac{\tan \frac{x}{2} - 1}{2\tan \frac{x}{2} + 3}$

Answer: C

[Watch Video Solution](#)

84. $\int \frac{1}{7 + 5\cos x} dx =$

A. $\frac{1}{\sqrt{5}} \tan^{-1} \left(\frac{1}{\sqrt{3}} \tan \frac{x}{2} \right) + c$

B. $\frac{1}{\sqrt{6}} \tan^{-1} \left(\frac{1}{\sqrt{6}} \tan \frac{x}{2} \right) + c$

C. $\frac{1}{\sqrt{7}} \tan^{-1} \left(\tan \frac{x}{2} \right) + c$

D. $\frac{1}{\sqrt{4}} \tan^{-1} \left(\tan \frac{x}{2} \right) + c$

Answer: B

[Watch Video Solution](#)

85. If $\int \frac{1}{5 + 4\cos 2\theta} d\theta = A \tan^{-1}(B \tan \theta) + c$ then $(A, B) =$

A. $\left(\frac{1}{2}, \frac{1}{2} \right)$

B. $\left(\frac{1}{3}, \frac{1}{3}\right)$

C. $\left(\frac{1}{2}, 3\right)$

D. $\left(\frac{1}{3}, 2\right)$

Answer: B



Watch Video Solution

86. $\int \frac{1}{1 - \cos x - \sin x} dx =$

A. $\log \left| 1 + \cot \frac{x}{2} \right| + c$

B. $\log \left| 1 - \tan \frac{x}{2} \right| + c$

C. $\log \left| 1 - \cot \frac{x}{2} \right| + c$

D. $\log \left| 1 + \tan \frac{x}{2} \right| + c$

Answer: C

[Watch Video Solution](#)

87. $\int \frac{dx}{\cos x - \sin x} =$

A. $\frac{1}{\sqrt{2}} \log \left| \tan \left(\frac{x}{2} - \frac{\pi}{8} \right) \right| + c$

B. $\frac{1}{\sqrt{2}} \log \left| \tan \left(\frac{x}{2} + \frac{3\pi}{8} \right) \right| + c$

C. $\frac{1}{\sqrt{2}} \log \left| \tan \left(\frac{x}{2} - \frac{3\pi}{8} \right) \right| + c$

D. $\frac{1}{\sqrt{2}} \log \left| \cot \frac{x}{2} \right| + c$

Answer: A

[Watch Video Solution](#)

88. If $\int \frac{1}{\sin x + \sqrt{3}\cos x} dx = A \log | \tan f(x) | + C$ then A , f(x) =

A. $\frac{1}{2}, \frac{x}{2} + \frac{\pi}{6}$

B. $\frac{1}{3}, \frac{x}{2} + \frac{\pi}{2}$

C. $\frac{1}{4}, \frac{\pi}{2} + \frac{\pi}{6}$

D. $\frac{1}{2}, x + \frac{\pi}{6}$

Answer: A



Watch Video Solution

89. Evaluate the integrals.

$$\int \frac{dx}{a^2 \sin^2 x + b^2 \cos^2 x} \text{ on } \mathbb{R}, a \neq 0, b \neq 0.$$

A. $\frac{1}{ab} \tan^{-1} \left(\frac{a}{b} \tan x \right) + c$

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

C. $\frac{1}{ab} \tan^{-1} \left(\frac{a}{b} \tan x \right) + c$

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

Answer: A



Watch Video Solution

90. $\int \frac{1}{4\cos^2 x + 9\sin^2 x} dx =$

A. $\frac{1}{6} \tan^{-1} \left(\frac{2}{3} \tan x \right) + C$

B. $\tan^{-1} \left(\frac{1}{3} \tan x \right) + C$

C. $\frac{1}{6} \tan^{-1} \left(\frac{3 \tan x}{2} \right) + C$

D. $\frac{1}{6} \tan^{-1} \left(\frac{1}{2} \tan x \right) + C$

Answer: C



Watch Video Solution

91. If $\int \frac{1}{2 + \sin^2 x} dx = k \cdot \tan^{-1} (l \tan x) + C$ then $(k, l) =$

A. $\left(\frac{1}{\sqrt{6}}, \frac{1}{\sqrt{3}}\right)$

B. $\left(\frac{1}{\sqrt{6}}, \sqrt{\frac{2}{3}}\right)$

C. $\left(\frac{1}{\sqrt{6}}, \frac{2}{3}\right)$

D. $\left(\frac{1}{\sqrt{6}}, \sqrt{\frac{3}{2}}\right)$

Answer: D



Watch Video Solution

92. $\int \frac{1}{\sin^2 x + 2 \sin x \cos x + 5 \cos^2 x} dx =$

A. $\frac{1}{3} \tan^{-1} \left[\frac{1}{3} (\tan x + 1) \right] + C$

B. $\tan^{-1} \left[\frac{\tan x + 1}{\sqrt{3}} \right] + C$

C. $\frac{1}{\sqrt{2}} \tan^{-1} \left[\frac{\tan x + 1}{\sqrt{2}} \right] + C$

D. $\frac{1}{2} \tan^{-1} \left[\frac{\tan x + 1}{2} \right] + C$

Answer: D



Watch Video Solution

93. If $\int \frac{3\cos x - 2\sin x}{4\sin x + 5\cos x} dx =$

$Ax + B \log | 5\cos x + 4 \sin x |$ then $(A, B) =$

A. $\left(\frac{7}{41}, \frac{22}{41} \right)$

B. $\left(\frac{22}{41}, \frac{7}{41} \right)$

C. $\left(\frac{15}{41}, \frac{7}{21} \right)$

D. $\left(\frac{7}{21}, \frac{15}{41} \right)$

Answer: A



Watch Video Solution

94. $\int \frac{\sin x + 8 \cos x}{4 \sin x + 6 \cos x} dx =$

A. $x + \frac{1}{2} \log (4 \sin x + 6 \cos x) + c$

B. $2x + \log (2 \sin x + 3 \cos x) + c$

C. $\frac{1}{2} \log (4 \sin x + 6 \cos x) + c$

D.

Answer: A



View Text Solution

95. If $\int \frac{1}{1 + \cot x} dx = Ax + B \log |\cos x + \sin x| + c$ then $(A, B) =$

A. $\left(\frac{1}{2}, \frac{1}{2}\right)$

B. $(1, 1)$

C. $(2, 2)$

D. $\left(\frac{1}{2}, \frac{-1}{2}\right)$

Answer: D



Watch Video Solution

96. If $\int \frac{4e^x + 6e^{-x}}{9e^x - 4e^{-x}} dx = Ax + B \log(9e^x - 4e^{-x}) + C$ then

A. $A = \frac{-19}{36}, B = \frac{35}{36}, C = 0$

B. $A = \frac{35}{36}, B = \frac{-19}{36}, C = 0$

C. $A = \frac{-19}{36}, B = \frac{35}{36}, C \in \mathbb{R}$

D. $A = \frac{35}{36}, B = \frac{-19}{36}, C \in \mathbb{R}$

Answer: C



View Text Solution

97. $\int x \operatorname{cosec} x \cot x \, dx =$

A. $x \operatorname{cosec} x - \log \left| \tan \frac{x}{2} \right| + c$

B. $-x \operatorname{cosec} x + \log \left| \tan \frac{x}{2} \right| + c$

C. $x \operatorname{cosec} x - 2 \log \left| \tan \frac{x}{2} \right| + c$

D. $x \cot x + \log \left| \tan \frac{x}{2} \right| + c$

Answer: B



Watch Video Solution

98. $\int \log \sqrt{x+1} \, dx =$

A. $\frac{1}{2} [(x-1) \log (x+1) - x] + c$

B. $\frac{1}{2} [(x+1) \log (x+1) - x] + c$

C. $\frac{1}{2} \left[x \log (x+1) - \frac{x^2}{2} \right] + c$

D. $\frac{1}{2} \left[(x - 1) \log(x + 1) - \frac{x^2}{2} \right] + c$

Answer: B



Watch Video Solution

99. $\int \sin x \cdot \log(\sec x + \tan x) dx = f(x) + x + c$ then $f(x) =$

A. $\cos x \cdot \log(\sec x + \tan x)$

B. $\sin x \cdot \log(\sec x + \tan x)$

C. $-\cos x \cdot \log(\sec x + \tan x)$

D. $-\cos x \cdot \log \sec x$

Answer: C



Watch Video Solution

100. $\int x^3 \cos(x^2) dx =$

A. $\frac{1}{2} \left[x^2 \sin(x^2) - \cos(x^2) \right] + c$

B. $\frac{1}{3} \left[x^2 \sin(x^2) + \cos(x^2) \right] + c$

C. $\frac{1}{2} \left[x^2 \sin(x^2) + \cos(x^2) \right] + c$

D. $\frac{1}{3} \left[x^2 \sin(x^2) - \cos(x^2) \right] + c$

Answer: C



Watch Video Solution

101. If $\int e^{\sqrt{x}} dx = K.e^{\sqrt{x}} f(x) + c$ then $K f(x) =$

A. $2, \sqrt{x} - 1$

B. $2, \sqrt{x} + 1$

C. $2, x + 1$

D. $2, x^2 - 1$

Answer: A



Watch Video Solution

102. Evaluate $\int \sin(\sqrt{x}) \, dx$

A. $2 \left[\sqrt{x} \cos \sqrt{x} - \sin \sqrt{x} \right] + c$

B. $2 \left[-\sqrt{x} \cos \sqrt{x} - \sin \sqrt{x} \right] + c$

C. $2 \left[\sqrt{x} \cos \sqrt{x} + \sin \sqrt{x} \right] + c$

D. $2 \left[-\sqrt{x} \cos \sqrt{x} + \sin \sqrt{x} \right] + c$

Answer: D



Watch Video Solution

103. $\int \log(2 - 3x) \, dx =$

A. $\left(x - \frac{2}{3}\right) \log |2 - 3x| - x + c$

B. $(x - 2) \log |2 - 3x| + 3x + c$

C. $\frac{1}{3}(x - 2) \log |2 - 3x| - 3x + c$

D. $\frac{1}{3}(x - 2) \log |2 - 3x| - 3x + c$

Answer: A



Watch Video Solution

104. $\int (\log x)^3 dx =$

A. $x \left[(\log x)^3 - (\log x)^2 + (\log x) - 6 \right] + c$

B. $x \left[(\log x)^3 + (\log x)^2 - (\log x) - 6 \right] + c$

C. $x \left[(\log x)^3 + (\log x)^2 + (\log x) - 6 \right] + c$

D. $x \left[(\log x)^3 - 3(\log x)^2 + 6(\log x) - 6 \right] + c$

Answer: D

[Watch Video Solution](#)

105. $\int \sinh^{-1}\left(\frac{x}{4}\right) dx =$

A. $x \sinh^{-1}\left(\frac{x}{4}\right) - \sqrt{x^2 + 16} + c$

B. $x \sinh^{-1}\left(\frac{x}{2}\right) + \sqrt{x^2 + 16} + c$

C. $x \sinh^{-1}\left(\frac{x}{2}\right) - \frac{1}{2} \sqrt{x^2 + 16} + c$

D. $x \sinh^{-1}\frac{x}{2} - x\sqrt{x^2 + 16} + c$

Answer: A

[Watch Video Solution](#)

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

A. $\frac{x^2}{2} \tan^{-1} x + \frac{1}{2} x + \frac{1}{2} \tan^{-1} x + c$

B. $\frac{1}{2} \tan^{-1} x \cdot (x^2 + 1) - \frac{x}{2} + c$

C. $\frac{x^2 + 1}{2} \cdot \tan^{-1} x + \frac{x}{2} + c$

D. $(x^2 + 1) \cdot \tan^{-1} x - \frac{x^2}{2} + c$

Answer: B



Watch Video Solution

107. $\int \sin^{-1} \left(\frac{2x}{1+x^2} \right) dx = f(x) - \log(1+x^2) + c \Rightarrow f(x) =$

A. $2x \tan^{-1} x$

B. $-2x \tan^{-1} x$

C. $x \tan^{-1} x$

D. $-x \tan^{-1} x$

Answer: A



Watch Video Solution

[Watch Video Solution](#)

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

A. $x^2 \tan^{-1}(x^2) + \frac{1}{2} \log(1 + x^4) + c$

B. $\frac{1}{2} \left[x^2 \tan^{-1}(x^2) - \log(1 + x^4) \right] + c$

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

D. $\frac{1}{2} \left[x^2 \tan^{-1}(x^2) - \frac{1}{2} \log(1 + x^4) \right] + c$

Answer: D

[Watch Video Solution](#)

109. Evaluate $\int \tan^{-1} \sqrt{\frac{1-x}{1+x}} dx$, on $(-1,1)$

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

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

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

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

Answer: A



Watch Video Solution

110. $\int \frac{\sin^{-1} x - \cos^{-1} x}{\sin^{-1} x + \cos^{-1} x} dx =$

A. $\frac{4}{\pi} \left[x \sin^{-1} x + \sqrt{1 - x^2} \right] - x + c$

B. $\frac{1}{\pi} \left[x \sin^{-1} x + \sqrt{1 - x^2} \right] - x + c$

C. $\frac{2}{\pi} \left[x \sin^{-1} x + \sqrt{1 - x^2} \right] - x + c$

D. $\frac{2}{\pi} \left[x \sin^{-1} x - \sqrt{1 - x^2} \right] - x + c$

Answer: A



Watch Video Solution

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

A. $\sqrt{1+x^2} \tan^{-1} x - \log \left(x + \sqrt{1+x^2} \right) + c$

B. $\sqrt{1+x^2} \tan^{-1} x + \log \left(x + \sqrt{1+x^2} \right) + c$

C. $\frac{\tan^{-1} x}{\sqrt{1+x^2}} + \log \left(x + \sqrt{1+x^2} \right) + c$

D. $\frac{\tan^{-1} x}{\sqrt{1+x^2}} - \log \left(x + \sqrt{1+x^2} \right) + c$

Answer: A

 **Watch Video Solution**

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

A. $2 \left\{ \sqrt{x} - \sqrt{1-x} \sin^{-1} \sqrt{x} \right\} + c$

B. $2 \left\{ \sqrt{x} + \sqrt{1-x} \sin^{-1} \sqrt{x} \right\} + c$

C. $2\left\{\sqrt{x} - \sqrt{1-x}\cos^{-1}\sqrt{x}\right\} + c$

D. $\sqrt{x}\sin^{-1}\sqrt{x} + c$

Answer: A



Watch Video Solution

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

A. $e^x \tan x + c$

B. $e^x \sec^2 \frac{x}{2} + c$

C. $e^x \tan \frac{x}{2} + c$

D. $\frac{1}{2} e^x \tan \frac{x}{2} + c$

Answer: C



Watch Video Solution

114. $\int e^x \left(\frac{2 + \sin 2x}{1 + \cos 2x} \right) dx =$

A. $e^x \cot x + c$

B. $2e^x \sec^2 x + c$

C. $e^x \cos 2x + c$

D. $e^x \tan x + c$

Answer: D



Watch Video Solution

115. $\int e^{2x} (2\sin x + \cos x) dx =$

A. $e^{2x} \sin x + c$

B. $e^{2x} \cos x + c$

C. $2e^{2x} \sin 2x + c$

D. $2e^{2x}\cos x + c$

Answer: A



Watch Video Solution

116. $\int e^x \left(x + \sqrt{1+x^2} \right) \left(1 + \frac{1}{\sqrt{1+x^2}} \right) dx =$

A. $e^x \cosh^{-1} x + c$

B. $\frac{e^x}{\sqrt{1+x^2}} + c$

C. $e^x \sinh^{-1} x + c$

D. $e^x \left(x + \sqrt{1+x^2} \right) + c$

Answer: D



Watch Video Solution

117. $\int \frac{x \cdot e^x}{(2+x)^3} dx =$

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

B. $\frac{xe^x}{(2+x)^2} + c$

C. $\frac{e^x}{(2+x)^2} + c$

D. $\frac{xe^x}{2+x} + c$

Answer: C



Watch Video Solution

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

A. $e^x \left(\frac{x-1}{x+1} \right) + c$

B. $e^{-x} \left(\frac{x+1}{x-1} \right) + c$

C. $e^x \left(\frac{x+1}{x^2+1} \right) + c$

D. $e^x \left(\frac{1}{x+1} \right) + c$

Answer: A



Watch Video Solution

119. $\int \left(\frac{2 - \sin 2x}{1 - \cos 2x} \right) e^x dx =$

A. $-2e^x \cot x + c$

B. $e^x \cot x + c$

C. $2e^x \cot x + c$

D. $-e^x \cot x + c$

Answer: D



Watch Video Solution

$$120. \int \frac{3 - x^2}{1 - 2x + x^2} e^x dx = e^x f(x) + c \Rightarrow f(x) =$$

A. $\frac{1 + x}{1 - x}$

B. $\frac{1 - x}{1 + x}$

C. $\frac{1 + x}{x - 1}$

D. $\frac{x - 1}{x + 1}$

Answer: A



Watch Video Solution

$$121. \int e^x \cdot \frac{x^3 + x + 1}{(1 + x^2)^{3/2}} dx =$$

A. $\frac{e^x}{\sqrt{1 + x^2}} + c$

B. $\frac{e^x \sqrt{1 + x^2}}{x} + c$

C. $e^x \cdot \frac{x}{\sqrt{1+x^2}} + c$

D. $\frac{e^x \cdot x}{(1+x^2)^{3/2}} + c$

Answer: C



Watch Video Solution

122. $\int [\sin(\log x) + \cos(\log x)] dx =$

A. $x \cos(\log x) + c$

B. $-x \cos(\log x) + c$

C. $x \log(\sin x) + c$

D. $x \sin(\log x) + c$

Answer: D



Watch Video Solution

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

A. $x \log x + c$

B. $\frac{x}{\log x} + c$

C. $x \cdot (\log x)^2 + c$

D. $\frac{x}{(\log x)^2} + c$

Answer: B



View Text Solution

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

A. $\frac{\log x}{(\log x)^2 + 1} + C$

B. $\frac{x}{x^2 + 1} + C$

C. $\frac{xe^x}{x^2 + 1} + C$

D. $\frac{x}{(\log x)^2} + c$

Answer: D



View Text Solution

125. $\int e^x \left[\ln x + \frac{1}{x^2} \right] dx =$

A. $e^x \ln x + C$

B. $e^x \left(\ln x - \frac{1}{x} \right) + c$

C. $e^x \left[\ln x - \frac{1}{x^2} \right] + c$

D. $\frac{e^x}{x^2} + c$

Answer: B



View Text Solution

126. $\int \left[\log(\log x) + (\log x)^{-2} \right] dx =$

A. $x \left\{ \log(\log x) - \frac{1}{\log x} \right\} + c$

B. $x \log(\log x) - \frac{1}{\log x} + c$

C. $\log(\log x) - \frac{x}{\log x} + c$

D. $x [\log(\log - x) - \log x] + c$

Answer: A



View Text Solution

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

A. $x^2 e^{\tan^{-1} x} + c$

B. $x e^{\tan^{-1} x} + c$

C. $e^{\tan^{-1}x} + c$

D. $\frac{1}{2}xe^{\tan^{-1}} + c$

Answer: B



Watch Video Solution

128. $\int e^{\sin^{-1}x} \left\{ 1 + \frac{x}{\sqrt{1-x^2}} \right\} dx =$

A. $xe^{\sin^{-1}x} + c$

B. $e^{\sin^{-1}x} + c$

C. $\frac{1}{\sqrt{1-x^2}} e^{\sin^{-1}x} + c$

D. $\sqrt{1-x^2} e^{\sin^{-1}x} + c$

Answer: A



View Text Solution

129. $\int \frac{x + \sin x}{1 + \cos x} dx =$

A. $x \tan \frac{x}{2} + c$

B. $x \cot \frac{x}{2} + c$

C. $\log |1 + \cos x| + c$

D. $x \log |\cos x| + c$

Answer: A



View Text Solution

130. $\int \frac{x - \sin x}{1 + \cos x} dx = \tan\left(\frac{x}{2}\right) + p \log \left| \sec\left(\frac{x}{2}\right) \right| + c \Rightarrow p =$

A. - 4

B. 4

C. 2

D. -2

Answer: A



Watch Video Solution

131. $\int \left(\frac{\cos x}{x} - \sin x \cdot \log x \right) dx =$

A. $(\log x) \sin x + c$

B. $(\log x)(\cos x) + c$

C. $-(\log x)(\cos x) + c$

D. $-(\log x) \sin x + c$

Answer: B



View Text Solution

132. $\int (1 + x - x^{-1})e^{x+x^{-1}} dx =$

A. $(x + 1)e^{x+x^{-1}} + c$

B. $(x - 1)e^{x+x^{-1}} + c$

C. $\frac{1}{2}xe^{x+x^{-1}} + c$

D. $x \cdot e^{x+x^{-1}} + c$

Answer: D



View Text Solution

133. $\int e^{-5x} \cdot \cos 12x \, dx =$

A. $\frac{e^{-5x}}{169} [5 \cos 12x - 12 \sin 12x] + c$

B. $\frac{e^{-5x}}{169} [5 \cos 12x + 12 \sin 12x] + c$

C. $-\frac{e^{-5x}}{169} [5 \cos 12x - 12 \sin 12x] + c$

$$D. -\frac{e^{-5x}}{169} [5 \cos 12x + 12 \sin 12x] + c$$

Answer: C



Watch Video Solution

$$134. \int 3^x \cos 5x \, dx =$$

$$A. \frac{3^x}{(\log 3)^2 + 25} [(\log 3) \cdot \cos 5x - 5 \sin 5x] + c$$

$$B. \frac{3^x}{(\log 3)^2 + 25} [(\log 3) \cdot \cos 5x + 5 \sin 5x] + c$$

$$C. \frac{3^x}{(\log 3)^2 + 25} [5 \cos 5x - (\log 3) \cdot \sin 5x] + c$$

$$D. \frac{3^x}{(\log 3)^2 + 25} [5 \cos 5x + (\log 3) \cdot \sin 5x] + c$$

Answer: B



Watch Video Solution

135. Evaluate the integrals.

$$\int \cos(\log x) dx \text{ on } (0, \infty).$$

A. $x [\cos (\log x) + \sin (\log x)] + c$

B. $\frac{x}{2} [\cos (\log x) - \sin (\log x)] + c$

C. $\frac{\log x}{2} [\cos x + \sin x] + c$

D. $\frac{x}{2} [\cos (\log x) + \sin (\log x)] + c$

Answer: D

 **Watch Video Solution**

136. If $I_n = \int \frac{\sin nx}{\cos x} dx$, then $I_n =$

A. $\frac{2}{(n-1)} \cos(n-1)x + c$

B. $-\frac{2}{(n-1)} \cos(n-1)x + c$

C. $\frac{2}{(n-2)} \cos(n-2)x + c$

D. $\frac{2}{(n-1)} \cos x + c$

Answer: B



Watch Video Solution

137. If $I_{m,n} = \int \sin^m x \cos^n x dx$ then $I_{5,4} =$

A. $\frac{\sin^4 x \cos^5 x}{9} + \frac{4}{9} I_{3,4}$

B. $-\frac{\sin^4 x \cos^5 x}{9} + \frac{4}{9} I_{3,4}$

C. $\frac{\sin^4 x \cos^5 x}{9} - \frac{4}{9} I_{3,4}$

D. $-\frac{\sin^4 x \cos^5 x}{9} - \frac{4}{9} I_{3,4}$

Answer: B



Watch Video Solution

138. If $I_n = \int \frac{e^{ax}}{x^n} dx$ then $I_n - \frac{a}{n-1} \cdot I_{n-1} =$

A. $-\frac{e^{ax}}{(n-1)x^{n-1}} + c$

B. $\frac{e^{ax}}{(n-1)x^{n-1}} + c$

C. $\frac{e^{ax}}{nx^{n-1}} + c$

D. $-\frac{e^{ax}}{(n-1)x^{n+2}} + c$

Answer: A



View Text Solution

139. If $I_n = \int (\log x)^n dx$ then $I_6 + 6I_5 =$

A. $x(\log x)^5 + c$

B. $-x(\log x)^5 + c$

C. $x(\log x)^6 + c$

D. $-x(\log x)^6 + c$

Answer: C



Watch Video Solution

140. Statement-I: $\int \frac{dx}{\sqrt{9-x^2}} = \sin^{-1}\left(\frac{x}{3}\right) + c$ Statement -II:

$$\int \frac{\cos x \, dx}{\sqrt{16 - \sin^2 x}} = \sin^{-1}\left(\frac{\sin x}{4}\right) + c$$

Which of the following s true ?

A. Only I

B. Only II

C. Both I and II

D. Neither I nor II

Answer: C



Watch Video Solution

141. $S_1: \int \frac{x^5}{x^2 + 1} dx = \frac{x^4}{4} - \frac{x^2}{4} - \frac{x^2}{2} + \log(x^2 + 1) + c$

$S_1: \int \frac{\sin^6 x}{\cos^8 x} dx = \frac{1}{7} \tan^7 x + c$

$S_3: \int \frac{x^8}{x^6 + 1} dx = \frac{x^3}{3} - \frac{1}{3} \tan^{-1} x^3 + c$

Which of the above statements is /are false ?

A. S_1 and S_2

B. S_2

C. S_1

D. S_1, S_2 and S_3

Answer: C



View Text Solution

142. If the curve $f(x) = \int e^x dx$ passing through (0,1) then the ascending order of $f(0)$, $f(1)$, $f(-1)$, $f(2)$ is

A. $f(0), f(1), f(-1), f(2)$

B. $f(-1), f(0), f(1), f(2)$

C. $f(2), f(1), f(0), f(-1)$

D. $f(1), f(0), f(-1), f(2)$

Answer: B



Watch Video Solution

143. If $\int \frac{1}{\sqrt{x^2 + x + 1}} dx = a \sinh^{-1}(bx + c) + d$ then descending order of a, b, c is

A. a, b, c

B. b, c, a

C. b, a, c

D. c, a, b

Answer: C



Watch Video Solution

144. If $\int \frac{dx}{\cos^3 x \sqrt{2 \sin 2x}} = (\tan x)^A + C(\tan x)^B + k$, where K is a constant of integration, then $A+B + C$ equals :

A. $\frac{16}{5}$

B. $\frac{27}{10}$

C. $\frac{7}{10}$

D. $\frac{21}{5}$

Answer: A



Watch Video Solution

145. Observe the following statements

Assertion (A) : $\int \left(\frac{x^2 - 1}{x^2} \right) e^{\frac{x^2+1}{x}} dx = e^{\frac{x^2+1}{x}} + e$

Reason (R) : $\int f^1(x) e^{f(x)} dx = f(x) + c$

Which of the following is true ?

- A. Both A and R are true and R is not the correct reason for A .
- B. Both A and R true and R is correct reason for A
- C. A is true, R is false
- D. A is false, R is true

Answer: C



View Text Solution

146. Assertion (A) :

$$\int \left(2x \tan x \sec^2 x + \tan^2 x \right) dx = x \tan^2 x + c$$

$$\text{Reason (R) : } \int \left(x f^1(x) + \int (x) \right) dx = x f(x) + c$$

The correct answer is

- A. Both (A) and (R) are true and (R) is the correct explanation of (A)
- B. Both (A) and (R) are true and (R) is not the correct explanation of (A)
- C. (A) is true but (R) is false
- D. (A) is false but (R) is true

Answer: A



Watch Video Solution

147. The anti derivative of $f(x) = 1 + 2^x \log 2$ is $g(x)$ and the curve $y = g(x)$ passes through $\left(-1, \frac{1}{2}\right)$ then the curve $y = g(x)$ meets the y-axis at

A. (0,-1)

B. (0,-1)

C. (0,2)

D. (1,0)

Answer: A



View Text Solution

148. If $\int \frac{1}{\cos^6 x + \sin^6 x} dx = \tan^{-1} f(x) + C$ then $f(x) =$

A. $\tan x - \cot x$

B. $\tan x + \cot x$

C. $\sec x + \tan x$

D. $\sec x - \tan x$

Answer: A



Watch Video Solution

149. $\int \frac{f(x)g'(x) - f'(x)g(x)}{f(x)g(x)} [\log(g(x)) - \log(f(x))] dx =$

A. $\frac{1}{2} \left(\log \frac{g(x)}{f(x)} \right)^2 + c$

B. $\left(\log \frac{g(x)}{f(x)} \right) + c$

C. $2(\log f(x) + \log g(x)) + C$

D. $\log f(x) - \log g(x) + c$

Answer: A



Watch Video Solution

150. If $\int x^3 e^{5x} dx - \frac{e^{5x}}{5^4} (f(x)) + 0_3$ then $f(x) =$

A. $\frac{x^3}{5} - \frac{3x^2}{5} + \frac{6x}{5^3} - \frac{6}{5^4}$

B. $5x^3 - 5^2x^2 + 5^2x - 6$

C. $5^2x^3 - 15^2x^2 + 30x - 6$

D. $5^3x^3 - 75x^2 + 30x - 6$

Answer: D



Watch Video Solution

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

A. $\frac{x^2 + 2}{x^2 + 2x + 2} - \frac{1}{2} \tan^{-1}(x + 1) + c$

B. $\frac{x^2 + 2}{2(x^2 + 2x + 2)} - \frac{1}{2} \tan^{-1}(x + 1) + c$

C. $\frac{1}{2} \log |x^2 + 2x + 2| - \tan^{-1}(x+1) + c$

D. $\frac{2(x-1)}{4(x^2 + 2x + 2)} - \frac{1}{2} \tan^{-1}(x+1) + c$

Answer: C



Watch Video Solution

152. If $\int \log(a^2 + x^2) dx = h(x) + c$, then $h(x) =$

A. $x \log(a^2 + x^2) + 2 \tan^{-1}\left(\frac{x}{a}\right)$

B. $x^2 \log(a^2 + x^2) + x + a \tan^{-1}\left(\frac{x}{a}\right)$

C. $x^2 \log(a^2 + x^2) - 2x + 2a \tan^{-1}\left(\frac{x}{a}\right)$

D. $x^2 \log(a^2 + x^2) + 2x - a^2 \tan^{-1}\left(\frac{x}{a}\right)$

Answer: C



Watch Video Solution

153. For $x > 0$, if

$$\int (\log x)^5 dx = x \left(A(\log x)^5 + B(\log x)^4 + C(\log x)^3 + D(\log x)^2 + E(\log x) + F \right) +$$

constant then $A + B + C + D + E + F =$

A. - 44

B. - 42

C. - 40

D. - 36

Answer: A



Watch Video Solution

154. $\int \frac{3\sin x - 5\cos x}{7\cos x + 2\sin x} dx =$

A. $-\frac{29}{53}x - \frac{31}{53}\log |7 \cos x + 2 \sin x| + c$

B. $\frac{11}{51}x + \frac{41}{51} \log |7 \cos x + 2 \sin x| + c$

C. $\frac{29}{53}x + \frac{31}{53} \log |3 \cos x - 5 \sin x| + c$

D. $\frac{29}{51}x - \frac{41}{51} \log |7 \cos x + 2 \sin x| + c$

Answer: A



Watch Video Solution

155. $\int \frac{1 - x^7}{x(1 + x^7)} dx = a \ln|x| + b \ln|x^7 + 1| + c \Rightarrow (a, b) =$

A. $\left(1, \frac{2}{7}\right)$

B. $\left(1, \frac{-2}{2}\right)$

C. $\left(1, \frac{-2}{7}\right)$

D. $\left(2, \frac{-2}{7}\right)$

Answer: C

[Watch Video Solution](#)

156. $\int \frac{6x^2 - 17x - 5}{(x-3)(x-2)^2} dx =$

A. $\log \frac{(x-2)^2}{(x-3)^4} + \frac{3}{x-2} + c$

B. $\log(x-2)^4(x-3)^2 + \frac{3}{x-2} + c$

C. $\log \frac{(x-2)^8}{(x-3)^2} - \frac{15}{x-2} + c$

D. $\log(x+3) - \frac{1}{x-2} + c$

Answer: C

[Watch Video Solution](#)

157. If $\int e^{2x} f'(x) dx = g(x)$, then $\int (e^{2x} f'(x) + e^{2x} f(x))$

A. $\frac{1}{2} [e^{2x} f(x) - g(x)] + c$

B. $\frac{1}{2} [e^{2x} f(x) + g(x)] + c$

C. $\frac{1}{2} \left[e^{2x} f(2x) + g(x) \right] + c$

D. $\frac{1}{2} \left[e^{2x} f(2x) + g(x) \right] + c$

Answer: B



View Text Solution

PRACTICE EXERCISE

1. If $f(x)$, $g(x)$ are primitives of $\phi(x)$ then

A. $f(x) = g(x)$

B. $f(x) - g(x) = \text{constant}$

C. $f(x) + g(x) = \text{constant}$

D. $f(x) g(x) = \text{constant}$

Answer: B

[View Text Solution](#)

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

A. $x - \frac{x^2}{2} - \frac{x^3}{3} - \frac{x^4}{4} + C$

B. $x + \frac{x^2}{2} + \frac{x^3}{3} + \frac{x^4}{4} + C$

C. $2x + \frac{x^2}{2} + \frac{x^3}{3} + \frac{x^4}{4} + C$

D. $x^2 + \frac{x^2}{2} + \frac{x^3}{3} + \frac{x^4}{4} + C$

Answer: B

[Watch Video Solution](#)

3. $\int \frac{x^4 + x^2 + 1}{x^2 + 1} dx =$

A. $\frac{x^3}{3} + \tan^{-1}x + C$

B. $\frac{x^3}{3} - \tan^{-1}x + C$

$$\text{C. } \frac{x^3}{2} + \tan^{-1}x + C$$

$$\text{D. } \frac{x^3}{2} + \tan^{-1}x + C$$

Answer: A



Watch Video Solution

$$4. \int \frac{x^6 - 1}{x^2 + 1} dx =$$

$$\text{A. } \frac{x^5}{5} - \frac{x^3}{3} + x + c$$

$$\text{B. } \frac{x^5}{5} - \frac{x^3}{3} + \tan^{-1}x + c$$

$$\text{C. } \frac{x^5}{5} - \frac{x^3}{3} + x + \tan^{-1}x + C$$

$$\text{D. } \frac{x^5}{5} - \frac{x^3}{3} + x - 2\tan^{-1}x + C$$

Answer: D



Watch Video Solution

5. $\int \frac{x^8}{x^6 + 1} dx =$

A. $\frac{1}{3} \left(x^3 + \tan^{-1} x^3 \right) + c$

B. $\frac{1}{3} \left(x^3 - \cos^{-1} x^3 \right) + c$

C. $\frac{1}{3} \left(-x^3 - \tan^{-1} x^3 \right) + c$

D. $\frac{1}{3} \left(x^3 - \tan^{-1} x^3 \right) + c$

Answer: D



Watch Video Solution

6. $\int \sin^2 x \sec^2 x dx =$

A. $-\cot x - x + C$

B. $\tan x - x + C$

C. $\cot x - X + C$

D. $\sin x - x + C$

Answer: B



Watch Video Solution

7. $\int (\tan x - \cot x)^2 dx =$

A. $\tan x + x + C$

B. $\tan x - x C$

C. $\tan x - \cot x + c$

D. $\tan x - \cot x - 4x + C$

Answer: D



Watch Video Solution

8. $\int \frac{1}{1 + \cos x} dx$

$I \subset \mathbb{R} \setminus \{(2n + 1)\pi : n \in \mathbb{Z}\}.$

A. $\cot x - \operatorname{cosec} x + C$

B. $-\cot x + \operatorname{cosec} x + C$

C. $-\cot x - \operatorname{cosec} x + C$

D. $\cot x - \sec x + C$

Answer: B



Watch Video Solution

9. $\int \frac{1}{1 + \cos 2x} dx =$

A. $\frac{1}{2} \tan x + C$

B. $-\frac{1}{2} \tan x + C$

C. $2 \tan x + C$

D. $-2 \tan x + C$

Answer: A

 [Watch Video Solution](#)

10. $\int \frac{1}{\cos 2x + \sin^2 x} dx =$

A. $-\tan x + c$

B. $\tan x + c$

C. $\cot x + c$

D. $\tan^2 x + c$

Answer: B

 [Watch Video Solution](#)

11. If $0 < x < \frac{\pi}{2}$ then

$$\int [1 + 2\cot x (\cot x \operatorname{cosec} x)]^{1/2} dx =$$

A. $\sqrt{\cot x \operatorname{cosec} x} + C$

B. $1 \log |\sin x/2| + C$

C. $\log |\operatorname{cosec} x + \cot x| + C$

D. $2 \log |\cos x/2| + C$

Answer: B



View Text Solution

12. Evaluate $\int \frac{\cos 2x - \cos 2\alpha}{\cos x - \cos \alpha}$

A. $\sin x + x \cos \alpha + c$

B. $2 (\sin x + x \cos \alpha) + c$

C. $x \sin x + \cos \alpha + c$

D. $x \sin \alpha + \cos x + c$

Answer: B



Watch Video Solution

13. If $x \in \left(\frac{\pi}{6}, \frac{\pi}{3}\right)$ then $\int \tan^{-1} \sqrt{\frac{1 - \cos 2x}{1 + \cos 2x}} dx =$

A. $x + C$

B. $\frac{x}{2} + C$

C. $\frac{x^2}{2} + c$

D. $\frac{x^3}{3} + C$

Answer: C



Watch Video Solution

14. $\int \frac{\sin(x - a)}{\sin x} dx =$

- A. $x \cos a - \sin x \log |\sin x| + C$
- B. $-x \cos a - \sin a \log |\sin x| + C$
- C. $x \cos a + \sin a \log |\sin x| + C$
- D. $-x \cos a + \sin a \log |\sin x| + C$

Answer: A



Watch Video Solution

15. $\int \frac{\sin(x - a)}{\cos(x - b)} dx =$

- A. $\cos (b - a)$
- B. $\sin (b - a)$
- C. $\cos (b + a)$

D. $\sin(b + a)$

Answer: B



Watch Video Solution

16. If $\int (\sin 2x + \cos 2x) dx = \frac{1}{\sqrt{2}} \sin (2x - c) + a$ then $c =$

A. $\pi/4$

B. $\pi/3$

C. $\pi/6$

D. $\pi/2$

Answer: A



View Text Solution

17. $\int \sin^3 x \cdot \cos^2 x \, dx =$

A. $\frac{1}{5} \cos^5 x - \frac{1}{3} \cos^3 x + C$

B. $\frac{1}{3} \cos^5 x - \frac{1}{3} \cos^3 x + C$

C. $\frac{1}{5} \cos^5 x + \frac{1}{3} \cos^3 x + C$

D. $\frac{1}{5} \cos^5 x - \frac{1}{3} \cos^5 x + C$

Answer: A



Watch Video Solution

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

A. $\frac{1}{2} \cot^{-1}(\cos^2 x) + c$

B. $\frac{1}{2} \tan^{-1}(\cos^2 x) + C$

C. $2 \cot^{-1}(\cos^2 x) + C$

D. $2\tan^{-1}(\cos^2 x) + C$

Answer: A



View Text Solution

19. $\int \frac{\cos x + x \sin x}{x(x - \cos x)} dx =$

A. $\log \left| 1 - \frac{\cos x}{x} \right| + c$

B. $\log |x(x - \cos x)| + c$

C. $\log \left| 1 + \frac{\cos x}{x} \right| + c$

D. $\log |x(x + \cos x)| + c$

Answer: A



Watch Video Solution

20. $\int \frac{1}{(e^x - e^{-x})^2} dx =$

A. $-\frac{1}{4} \tanh x + C$

B. $-\frac{1}{2} \coth x + C$

C. $-\frac{1}{2} \tanh x + C$

D. $-\frac{1}{4} \coth x + C$

Answer: D



Watch Video Solution

21. $\int \frac{a \cos^3 x + b \sin^3 x}{\cos^2 x \sin^2 x} dx =$

A. $a \operatorname{cosec} x + b \sec x + C$

B. $-a \operatorname{cosec} x + b \sec x + C$

C. $-a \operatorname{cosec} x - b \sec x + C$

$$\text{D. } -\frac{a}{2} \operatorname{cosec} x + \frac{b}{2} \sec x + C$$

Answer: B



Watch Video Solution

$$22. \int \frac{\cos 4x + 1}{\cot x - \tan x} dx =$$

A. $\frac{1}{8} \cos 4x + C$

B. $\frac{1}{4} \cos 4x + C$

C. $-\frac{1}{4} \cos 4x + C$

D. $-\frac{1}{8} \cos 4x + C$

Answer: D



Watch Video Solution

23. $\int \left(\sum_{r=0}^{\infty} \frac{x^r 2^r}{r!} \right) dx =$

A. $e^x + C$

B. $\frac{1}{2}e^{2x} + C$

C. $2e^{2x} + C$

D. $\frac{1}{2}e^x + C$

Answer: B



Watch Video Solution

24. $\int 5^{2+3x} dx =$

A. $\frac{5^{2+3x}}{\log 5} + C$

B. $\frac{5^{2+3x}}{2\log 5} + C$

C. $\frac{5^{2+3x}}{5\log 3} + C$

$$D. \frac{5^{2+3x}}{3\log 5} + C$$

Answer: D



Watch Video Solution

$$25. \int \frac{1}{\sqrt{4-5x}} dx =$$

$$A. \frac{3}{5} \sqrt{4-5x} + C$$

$$B. -\frac{2}{5} \sqrt{4+5x} + C$$

$$C. \frac{2}{5} \sqrt{4-5x} + C$$

$$D. -\frac{2}{5} \sqrt{4-5x} + C$$

Answer: D



Watch Video Solution

26. $\int (1 + 4x + 6x^2 + 4x^3 + x^4) dx$

A. $4 + 12x + 12x^2 + 4x^3 + C$

B. $\frac{(1+x)^5}{5} + C$

C. $\frac{(1+x)^6}{5} + C$

D. $\frac{(1+x)^3}{3} + C$

Answer: B



Watch Video Solution

27. $\int \sec x / 3 \tan x / 3 dx$

A. $3 \sec \frac{x}{3} + C$

B. $2 \sec \frac{x}{2} + c$

C. $3 \tan \frac{x}{3} + C$

D. $2\tan\frac{x}{3} + C$

Answer: A



Watch Video Solution

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

A. $\frac{\sin 2x}{2} + C$

B. $-\frac{1}{2} \sin 2x + C$

C. $\frac{1}{2} \log |\sec 2x + \tan 2x| + C$

D. $\frac{2}{3} \log |\sec x| + C$

Answer: C



Watch Video Solution

29. $\int \sin^2 8x \, dx =$

A. $\frac{1}{2} \left(x + \frac{\sin 16x}{16} \right) + C$

B. $\frac{1}{2} \left(x - \frac{\sin 16x}{16} \right) + C$

C. $\frac{1}{8} \left(x + \frac{\sin 16x}{2} \right) + C$

D. $\frac{1}{16} \left(x - \frac{\sin 16x}{16} \right) + C$

Answer: B



Watch Video Solution

30. Evaluate the integrals.

$\int \sin^3 x \, dx$ on R .

A. $\frac{1}{4} \left[\frac{\cos 3x}{3} - 3 \cos x \right] + C$

B. $\frac{1}{4} \left[\frac{-\cos 3x}{3} - 3 \cos x \right] + C$

$$\text{C. } \frac{1}{4} \left[\frac{\cos 3x}{3} + 3 \cos x \right] + C$$

$$\text{D. } \frac{1}{4} \left[-\frac{\cos 3x}{3} + 3 \cos x \right] + C$$

Answer: A



Watch Video Solution

$$31. \int \cos^4 x dx =$$

$$\text{A. } \frac{1}{8} \left[3x + 2\sin 2x - \frac{1}{2}\sin 4x \right] + c$$

$$\text{B. } \frac{1}{8} \left[3x + 2\sin 2x + \frac{1}{4}\sin 4x \right] + c$$

$$\text{C. } \frac{1}{8} \left[3x - 2\sin 2x - \frac{1}{4}\sin 4x \right] + c$$

$$\text{D. } \frac{1}{8} \left[3x - 2\sin 2x + \frac{1}{4}\sin 4x \right] + C$$

Answer: B



Watch Video Solution

32. $\int \sin 5x \cos 3x dx =$

A. $\frac{1}{2} \left[\frac{\cos 2x}{2} + \frac{\cos 8x}{8} \right] + C$

B. $\frac{1}{2} \left[-\frac{\cos 2x}{2} + \frac{\cos 8x}{8} \right] + C$

C. $\frac{1}{2} \left[-\frac{\cos 2x}{2} - \frac{\cos 8x}{8} \right] + C$

D. $\frac{1}{2} \left[\frac{\cos 2x}{2} - \frac{\cos 8x}{8} \right] + C$

Answer: C



Watch Video Solution

33. $\int \frac{\sin x + \cos x}{\sqrt{1 + \sin 2x}} dx =$

A. $x + C$

B. $-x + C$

C. $\pm x + C$

D. 0

Answer: C



Watch Video Solution

34. $\int \frac{\sin x - \cos x}{\sqrt{\sin 2x}} dx =$

A. $-\cosh^{-1}(\sin x + \cos x) + c$

B. $\cosh^{-1}(\sin x + \cos x) + c$

C. $-\sinh^{-1}(\sin x + \cos x) + c$

D. $\sinh^{-1}(\sin x + \cos x) + c$

Answer: A



Watch Video Solution

35. If $x \in \left(0, \frac{\pi}{2}\right)$ then $\int \sqrt{\left[\frac{\sin x - \sin^3 x}{1 + \sin^3 x}\right]} dx =$

A. $\frac{2}{3} \cosh^{-1}(\sin x)^{\frac{3}{2}} + c$

B. $\frac{2}{3} \sinh^{-1}(\sin x)^{\frac{3}{2}} + c$

C. $\frac{2}{3} \cosh^{-1}(\cos x)^{\frac{3}{2}} + c$

D. $\frac{2}{3} \sinh^{-1}(\cos x)^{\frac{3}{2}} + c$

Answer: B



Watch Video Solution

36. $\int \sqrt{\sec x - 1} \, dx =$

A. $2 \tan^{-1}(\sqrt{\sec x - 1}) + c$

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

C. $2 \tanh^{-1}(\sqrt{\sec x - 1}) + c$

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

Answer: B



View Text Solution

37. If $x \in \left(0, \frac{\pi}{2}\right)$ then $\int \sqrt{1 + \sin x} \, dx =$

A. $2\sin\frac{x}{2} + 2\cos\frac{x}{2} + C$

B. $2\sin\frac{x}{2} - \cos\frac{x}{2} + C$

C. $2\sin\frac{x}{2} - 2\cos\frac{x}{2} + C$

D. $\sin\frac{x}{2} - 2\cos\frac{x}{2} + C$

Answer: C



Watch Video Solution

38. If $x \in \left(\frac{\pi}{4}, \frac{\pi}{2}\right)$ then $\int \sqrt{1 - \sin 2x} dx =$

A. $\sin x - \cos x + C$

B. $\sin x + \cos x + C$

C. $-(\sin x + \cos x) + C$

D. $\cos x - \sin x + C$

Answer: C



Watch Video Solution

39. If $x \in (\pi, 2\pi)$ then $\int \sqrt{1 - \cos 2x} dx =$

A. $\sqrt{2} \sin x + C$

B. $-\sqrt{2} \sin x + C$

C. $\sqrt{2} \cos x + C$

D. $-\sqrt{2} \cos x + C$

Answer: C



Watch Video Solution

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

A. $\frac{1}{2} \cos 2x + C$

B. $-\frac{1}{2} \cos 2x + C$

C. $\frac{1}{4} \cos 2x + C$

D. $-\frac{1}{4} \cos 2x + C$

Answer: D



Watch Video Solution

41. $\int x^3 \sec^2(x^4) dx =$

A. $-\frac{1}{4} \tan(x^4) + C$

B. $\frac{1}{2} \tan(x^4) + C$

C. $\frac{1}{4} \tan(x^4) C$

D. $-\frac{1}{2} \tan(x^4) + C$

Answer: C



Watch Video Solution

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

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

B. $\log \left| (\sin^{-1}x) \right| + C$

C. $-\frac{1}{2}\log(1-x^2) + C$

D. $\log|1+x^2| + C$

Answer: C



Watch Video Solution

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

A. 2

B. 1

C. 3

D. 4

Answer: B



Watch Video Solution

44. $\int \frac{\sqrt{x}}{1+x} dx =$

A. $\sqrt{x} - \tan^{-1}\sqrt{x} + C$

B. $\sqrt{x} + \tan^{-1}\sqrt{x} + C$

C. $2\left(\sqrt{x} + \tan^{-1}\sqrt{x}\right) + C$

D. $2\left(\sqrt{x} - \tan^{-1}\sqrt{x}\right) + C$

Answer: D



Watch Video Solution

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

A. $\cot(xe^x) + C$

B. $\tan(xe^x) + C$

C. $\sin(xe^x) + C$

D. $\sec \left(x e^x \right) + C$

Answer: B



Watch Video Solution

46. $\int \frac{x^3}{1+x^8} dx =$

A. $\frac{1}{2} \tan^{-1} \left(x^4 \right) + C$

B. $\frac{1}{4} \tan^{-1} \left(x^4 \right) + C$

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

D. $\frac{1}{4} \tan^{-1} x^2 + C$

Answer: B



Watch Video Solution

47. $\int \frac{e^x}{(2e^x - 3)^2} dx =$

A. $\frac{1}{2(2e^x - 3)} + C$

B. $-\frac{1}{2(2e^x - 3)} + C$

C. $-\frac{1}{(2e^x - 3)} + C$

D. $\frac{1}{2(2e^x + 3)} + C$

Answer: B



Watch Video Solution

48. $\int e^{\sin^2 x + \cos x} (\sin 2x - \sin x) dx =$

A. $e^{\sin^2 x + \cos x} + C$

B. $e^{\sin^2 x - \cos x} + C$

C. $e^{\sin 2x - \sin x} + C$

D. $e^{\sin^2 x + \sin x} + C$

Answer: A



Watch Video Solution

49. $\int e^{\cot x + 2 \log \operatorname{cosec} x} dx =$

A. $e^{\cot x} + c$

B. $-e^{\cot x} + c$

C. $e^{\operatorname{cosec} x} + c$

D. $-e^{\operatorname{cosec} x} + c$

Answer: B



Watch Video Solution

50. $\int \sqrt{\tan x} \sec^2 x \, dx =$

A. $\frac{2}{3}(\cos x)^{3/2} + C$

B. $(\tan x)^{3/2} + C$

C. $\frac{1}{3}(\tan x)^{3/2} + C$

D. $\frac{2}{3}(\tan x)^{3/2} + C$

Answer: D



Watch Video Solution

51. Evaluate the integrals.

$$\int \frac{x^2}{\sqrt{1-x}} dx, x \in (-\infty, 1).$$

A. $\sqrt{1+x} - \frac{x}{3}(1+x^2)^{3/2} + c$

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

C. $x\sqrt{1+x^2} - \frac{2}{3}(1+x^2)^{3/2} + c$

D. $x\sqrt{1+x^2} - \frac{1}{3}(1+x^2)^{1/2} + c$

Answer: C



Watch Video Solution

52. $\int \frac{x^{5/2}}{\sqrt{1+x^7}} dx =$

A. $\frac{2}{7} \log(x^{7/2} + \sqrt{x^7 + 1}) + C$

B. $\frac{1}{2} \log\left(\frac{x^7 + 1}{x^7 - 1}\right) + C$

C. $2\sqrt{1+x^7} + C$

D. $3\sqrt{1+x^7} + C$

Answer: A



Watch Video Solution

$$53. \int \frac{\sec^2 x}{\sqrt{a + b \tan x}} dx =$$

$$A. \frac{2}{b} \sqrt{a + b \tan x} C$$

$$B. -\frac{2}{b} \sqrt{a + b \tan x} + C$$

$$C. \frac{2}{b} \sqrt{a - b \tan x} + C$$

$$D. -\frac{2}{b} \sqrt{a - b \tan x} + C$$

Answer: A



Watch Video Solution

$$54. \int \frac{dx}{\sqrt{\sin^3 x \cos x}} = g(x) + c \Rightarrow g(x) =$$

$$A. \frac{-2}{\sqrt{\tan x}} + C$$

$$B. 2\sqrt{\tan x} + c$$

$$C. \frac{2}{\sqrt{\tan x}} + C$$

D. $-2\sqrt{\tan x} + C$

Answer: A



Watch Video Solution

55. $\int \frac{dx}{\cos x \sqrt{\cos 2x}} =$

A. $\cos^{-1}(\tan x) + C$

B. $\cos(\tan^{-1} x) + C$

C. $\sin^{-1}(\tan x) + C$

D. $\tan(\sin^{-1} x) + C$

Answer: C



Watch Video Solution

$$56. \int \frac{1}{\sin x \sqrt{\sin x \cos x}} dx =$$

A. $\sqrt{\tan x} + c$

B. $2\sqrt{\tan x} + c$

C. $-2\sqrt{\cot x} + C$

D. $\sqrt{\cot x} + c$

Answer: C



Watch Video Solution

$$57. \int \frac{\left[x + \sqrt{a^2 + x^2} \right]^n}{\sqrt{a^2 + x^2}} dx (n \neq 0) =$$

A. $\frac{1}{n+1} \left(x + \sqrt{a^2 + x^2} \right)^{n+1} + C$

B. $\frac{1}{n \left(x + \sqrt{a^2 + x^2} \right)} + C$

C. $\left(x + \sqrt{a^2 + x^2} \right)^n + C$

D. $\frac{1}{n} \left(x + \sqrt{a^2 + x^2} \right)^n + C$

Answer: D



Watch Video Solution

58. $\int \frac{\sec x}{a \cos x + b \sin x} dx =$

A. $\frac{1}{a} \log | a \cot x + b | + C$

B. $a \log | a + b \tan x | + C$

C. $b \log | a | b \tan x | + C$

D. $\frac{1}{b} \log | a + b \tan x | + C$

Answer: D



Watch Video Solution

59. Evaluate the integrals.

$$\int \frac{1}{x \log x [\log(\log x)]} dx \text{ on } (1, \infty)$$

A. $\log |\log(\log x)| + C$

B. $\log |\log x| + C$

C. $(\log x)^2 + C$

D. $\frac{1}{\log |\log x|} + C$

Answer: A



Watch Video Solution

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

A. $\frac{1}{2} \ln \left(\frac{1+x}{1-x} \right)^2 + C$

B. $\frac{1}{4} \left[\ln \left(\frac{1+x}{1-x} \right) \right]^2 + C$

C. $\frac{1}{3} \ln \left(\frac{1+x}{1-x} \right) + C$

D. $\frac{1}{2} \left[\ln \left(\frac{1+x}{1-x} \right) \right]^3 + C$

Answer: B



Watch Video Solution

61. $\int \frac{1}{x\sqrt{x^6+1}} dx =$

A. $\frac{1}{3} \sinh^{-1} \left(\frac{1}{x^3} \right) + C$

B. $-\frac{1}{3} \sinh^{-1} (x^3) + C$

C. $-\frac{1}{3} \sinh^{-1} \left(\frac{1}{x^3} \right) + C$

D. $3 \sinh^{-1} \left(\frac{1}{x^3} \right) + C$

Answer: C

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

A. $-\sqrt{1-x^2} + \frac{1}{2}(\sin^{-1}x)^2 + C$

B. $\sqrt{1-x^2} + \frac{1}{2}(\sin^{-1}x)^2 + C$

C. $\sqrt{1-x^2} + \sin^{-1}x + C$

D. $\sqrt{1-x^2} - \frac{1}{2}(\sin^{-1}x) + C$

Answer: A

63. $\int \sec^m x \cdot \tan x dx =$

A. $\frac{1}{m} \sec^m x + c$

B. $-\frac{1}{m} \sec^m x + C$

C. $\frac{1}{m} \tan^m x + C$

D. $\frac{1}{m+1} \cdot \sec^{m+1} x + C$

Answer: A



Watch Video Solution

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

A. $\frac{2}{3} \sqrt{2 + 3\sin x} +$

B. $\frac{2}{3} \sqrt{3 + 2\sin x} + C$

C. $\frac{2}{3} \sqrt{2 + \sin x} + C$

D. $\frac{3}{2} \sqrt{2 + 3\sin x} + C$

Answer: A



Watch Video Solution

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

- A. $-\log |\cos 2x + \sin 3x| + C$
- B. $\log |\cos 2x + \sin 3x| + C$
- C. $\log |\cos 2x - \sin 3x| + C$
- D. $\frac{1}{6} \log |\cos 2x + \sin 3x| + C$

Answer: B



Watch Video Solution

66. If $\int \frac{\sec^2 x}{3 + 4\tan x} dx = K \log |3 + 4 \tan x| + C$ then $1/K =$

- A. $1/4$
- B. 2
- C. $1/2$
- D. 4

Answer: D



Watch Video Solution

67. $\int \frac{\sec^2 x}{\log(\tan x)^{\tan x}} dx =$

A. $\log |\tan x| + C$

B. $\log |\log (\tan x)| + C$

C. $\frac{1}{\log(\tan x)} + C$

D. $\frac{\tan x}{\log|\tan x|} + C$

Answer: B



Watch Video Solution

68. $\int \frac{1}{\sec x + \tan x} dx =$

A. $-\log |1 + \sin x| + C$

B. $\log |1 + \sin x| + C$

C. $\log |1 - \sin x| + C$

D. $\log |\sec x - \tan x| + C$

Answer: B



Watch Video Solution

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

A. $\log |e^x + e^{-x}| + C$

B. $-\log |e^x + e^{-x}| + C$

C. $\log |e^x - e^{-x}| + C$

D. $-\log |e^x - e^{-x}| + C$

Answer: A

[Watch Video Solution](#)

70. $\int \frac{e^x}{e^{x/2} - 1} dx =$

A. $\left[e^{x/2} - x - \log \left| e^{x/2} + 1 \right| \right] + C$

B. $2 \left[e^{x/2} + 1 - \log \left| e^{x/2} + 1 \right| \right] + C$

C. $-\frac{1}{2} \log^2 (\operatorname{cosec} x - \cot x) + C$

D. $\frac{1}{2} \log (\operatorname{cosec} x - \cot x) + C$

Answer: C

[Watch Video Solution](#)

71. Evaluate the following integrals

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

A. $\frac{1}{4} \log^2 (\operatorname{cosec} x + \cot x) + C$

B. $\frac{1}{2} \log^2 (\operatorname{cosec} x - \cot x) + C$

C. $-\frac{1}{2} \log^2 (\operatorname{cosec} x - \cot x) + C$

D. $\frac{1}{2} \log (\operatorname{cosec} x - \cot x) + C$

Answer: B



Watch Video Solution

72. $\int \frac{\log(\tan x)}{\sin x \cos x} dx =$

A. $\log^2(\tan x) + C$

B. $\frac{1}{2} \log^2 (\tan x) + C$

C. $\log (\log \tan x) + C$

D. $\frac{1}{2} \log (\log \tan x) + c$

Answer: B



Watch Video Solution

73. $\int \frac{x^2 \tan^{-1}(x^3)}{1+x^6} dx =$

A. $\frac{1}{3} (\tan^{-1} x)^3 + C$

B. $\frac{1}{6} (\tan^{-1} x^3)^2 + C$

C. $\frac{1}{3} (\tan^{-1} x^2)^3 + C$

D. $\frac{1}{3} (\tan^{-1} x^3)^3 + C$

Answer: B



Watch Video Solution

74. $\int \frac{2 + \cos x/2}{x + \sin x/2} dx =$

A. $\log \left| x + \sin \frac{x}{2} \right| + C$

B. $\frac{1}{2} \log \left| x + \sin \frac{x}{2} \right| + C$

C. $2\log\left|x + \sin\frac{x}{2}\right| + C$

D. $-\frac{1}{2}\log\left|x + \sin\frac{x}{2}\right| + C$

Answer: C



Watch Video Solution

75. $\int \frac{1}{\sqrt{9x^2 - 25}} dx =$

A. $\frac{1}{2} \cosh^{-1}\left(\frac{5x}{3}\right) + C$

B. $\frac{1}{3} \cosh^{-1}\left(\frac{3x}{5}\right) + C$

C. $\frac{1}{2} \cosh^{-1}\left(\frac{3x}{5}\right) + C$

D. $\frac{1}{15} \cosh^{-1}\left(\frac{3x}{5}\right) + C$

Answer: B



Watch Video Solution

76. $\int \frac{3^x}{\sqrt{25 - 9^x}} dx =$

A. $\frac{1}{\log 3} \sin^{-1} \left(\frac{3^x}{5} \right) + c$

B. $\frac{1}{\log 3} \cosh^{-1} (3^x) + c$

C. $\frac{1}{\log 3} \sin^{-1} \left(\frac{3^x}{2} \right) + c$

D. $\frac{1}{\log 3} \sin^{-1} \left(\frac{3^x}{\sqrt{5}} \right) + c$

Answer: A



Watch Video Solution

77. $\int \frac{3^x}{\sqrt{16 + 9^x}} dx =$

A. $\frac{1}{\log 3} \sin^{-1} \left(\frac{3^x}{4} \right) + C$

B. $\frac{1}{\log 3} \cosh^{-1} \left(\frac{3^x}{4} \right) + C$

C. $-\frac{1}{\log 3} \sinh^{-1} \left(\frac{3^x}{4} \right) + C$

D. $\frac{1}{\log 3} \sinh^{-1} \left(\frac{3^x}{4} \right) + C$

Answer: D



Watch Video Solution

78. If $\int \frac{2^x}{1 - 4^x} dx = K \log \left| \frac{1 + 2^x}{1 - 2^x} \right| + C$ then $K =$

A. $\log 2$

B. $\log 4$

C. $\frac{1}{\log 2}$

D. $\frac{1}{\log 4}$

Answer: D



Watch Video Solution

79. $\int \frac{1}{(9 - x^2)^{3/2}} dx =$

A. $\frac{x}{\sqrt{9 - x^2}} + C$

B. $-\frac{1}{9} \cdot \frac{x}{\sqrt{9 - x^2}} + C$

C. $\frac{1}{9} \cdot \frac{x}{\sqrt{9 - x^2}} + C$

D. $\frac{1}{9} \cdot \frac{1}{\sqrt{9 - x^2}} + c$

Answer: C



Watch Video Solution

80. $\int \frac{1}{\sqrt{x^2 - 4x - 5}} dx =$

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

B. $\sinh^{-1}\left(\frac{x-2}{3}\right) + C$

C. $\cosh^{-1}\left(\frac{x-2}{3}\right) + C$

D. $\sinh^{-1}\left(\frac{x+2}{3}\right) + C$

Answer: C



Watch Video Solution

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

A. $\frac{1}{4} \log|x^2 - 4x + 5| + c$

B. $\frac{1}{4} \log|x^2 + 4x + 5| + c$

C. $\frac{1}{2} \log|x^2 + 4x + 5| + c$

D. $\frac{1}{2} \log \left| x^2 - 4x + 5 \right| + c$

Answer: D



Watch Video Solution

82. $\int \frac{1}{x^2 + 8x + 25} dx =$

A. $\frac{1}{2} \tan^{-1} \left(\frac{x+4}{3} \right) + C$

B. $\frac{1}{3} \tan^{-1} \left(\frac{x+3}{4} \right) + C$

C. $\frac{1}{3} \tan^{-1} \left(\frac{x+4}{3} \right) + C$

D. $\frac{1}{3} \tan^{-1} \left(\frac{x+2}{3} \right) + C$

Answer: C



Watch Video Solution

$$83. \int \frac{dx}{x \left[10 + 7 \log x + (\log x)^2 \right]} =$$

$$A. \frac{1}{3} \log \left| \frac{2 + \log x}{5 + \log x} \right| + c$$

$$B. \frac{1}{3} \log \left| \frac{5 + \log x}{2 + \log x} \right| + c$$

$$C. \frac{1}{10} \log \left| \frac{2 + \log x}{5 + \log x} \right| + c$$

$$D. \frac{1}{10} \log \left| \frac{5 + \log x}{2 + \log x} \right| + c$$

Answer: A

 **Watch Video Solution**

$$84. \int \frac{\sec^2 x}{\sqrt{\tan^2 x - 2 \tan x + 5}} dx =$$

$$A. \sin^{-1} (\tan x - 1) + c$$

$$B. \sinh^{-1} \left[\frac{\tan x + 1}{2} \right] + c$$

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

D. $\sinh^{-1}(\tan x + 1) + c$

Answer: C



Watch Video Solution

85. Evaluate the following integrals

$$\int \sqrt{1 + 3x - x^2} \, dx$$

A. $\frac{2x - 3}{4} \sqrt{1 + 3x - x^2} + \frac{13}{8} \sin^{-1}\left(\frac{2x - 3}{\sqrt{13}}\right) + c$

B. $\frac{2x - 3}{4} \sqrt{1 + 3x - x^2} - \frac{13}{8} \sin^{-1}\left(\frac{2x - 3}{\sqrt{13}}\right) + c$

C. $\frac{2x + 3}{4} \sqrt{1 + 3x - x^2} - \frac{13}{8} \sin^{-1}\left(\frac{2x - 3}{\sqrt{13}}\right) + c$

D. $\frac{2x + 3}{4} \sqrt{1 + 3x - x^2} + \frac{13}{8} \sin^{-1}\left(\frac{2x - 3}{\sqrt{13}}\right) + c$

Answer: A

[Watch Video Solution](#)

$$86. \int \frac{1}{e^x + 2e^{-x} - 3} dx =$$

A. $\log \left| \frac{e^x - 1}{e^x + 2} \right| + c$

B. $\log \left| \frac{e^x + 1}{e^x - 2} \right| + c$

C. $\log \left| \frac{e^x + 1}{e^x + 2} \right| + c$

D. $\log \left| \frac{e^x + 1}{2} \right| + c$

Answer: C

[Watch Video Solution](#)

$$87. \int \frac{1}{(x+2)\sqrt{x+1}} dx =$$

A. $\frac{2}{5}(x+1)^{\frac{3}{2}}(3x+8) + c$

B. $\frac{2}{15}(x+1)^{\frac{3}{2}}(3x+8) + c$

C. $\frac{2}{5}(x+1)^{\frac{3}{2}}(3x-8) + c$

D. $\frac{2}{15}(x+1)^{\frac{3}{2}}(3x-8) + c$

Answer: B



Watch Video Solution

88. $\int \frac{2x+3}{x^2+2x+2} dx =$

A. $\tan^{-1}(x+1) + c$

B. $\tan^{-1}(x+1) - \log(x^2+2x+2) + c$

C. $\tan^{-1}(x+1) + \log(x^2+2x+2) + c$

D. $\log(x^2+2x+2) + c$

Answer: C

[Watch Video Solution](#)

89. $\int \frac{(x-1)}{2x^2+5x+2} dx =$

A. $\log \left| \frac{x+2}{2x+1} \right| + c$

B. $\log \left| \frac{2x+1}{x+2} \right| + c$

C. $\log \left| \frac{x+2}{\sqrt{2x+1}} \right| + c$

D. $\log \left| \frac{2x+1}{\sqrt{x+2}} \right| + c$

Answer: C

[Watch Video Solution](#)

90. Evaluate the following integrals.

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

A. $\log \left| x^2 + x + 1 \right| + \frac{2}{\sqrt{3}} \log \left| \frac{2x + 1}{\sqrt{3}} \right| + c$

B. $\log \left| x^2 + x + 1 \right| + \frac{4}{\sqrt{3}} \tan^{-1} \left| \frac{2x + 1}{\sqrt{3}} \right| + c$

C. $\log \left| x^2 + x + 1 \right| + \frac{2}{\sqrt{3}} \tan^{-1} \left| \frac{2x + 1}{\sqrt{3}} \right| + c$

D. $\log \left| x^2 + x + 1 \right| + \frac{2}{\sqrt{3}} \tan^{-1} \left| \frac{2x + 1}{\sqrt{3}} \right| + c$

Answer: B



Watch Video Solution

91. $\int \frac{dx}{\sqrt{2n - x}} =$

A. $\sin^{-1} \left(\frac{x + a}{a} \right) + C$

B. $\sin^{-1} \left(\frac{x - a}{a} \right) + C$

C. $\cos^{-1} \left(\frac{x + a}{a} \right) + C$

$$\text{D. } \cos^{-1}\left(\frac{x-a}{a}\right) + C$$

Answer: B



View Text Solution

$$92. \int \frac{3x+3}{\sqrt{x^2+2x+5}} dx =$$

$$\text{A. } \sqrt{x^2+2x+5} + \sinh^{-1}\left(\frac{x-1}{2}\right) + C$$

$$\text{B. } 3\sqrt{x^2+2x+5} + \sinh^{-1}\left(\frac{x-1}{2}\right) + C$$

$$\text{C. } \sqrt{x^2+2x+5} + \sinh^{-1}\left(\frac{x+1}{2}\right) + C$$

$$\text{D. } 3\sqrt{x^2+2x+5} + \sinh^{-1}\left(\frac{x+1}{2}\right) + c$$

Answer: D



View Text Solution

93. $\int \frac{dx}{(x+1)\sqrt{4x+3}} =$

A. $\tan^{-1}\sqrt{4x+3} + c$

B. $3\tan^{-1}\sqrt{4x+3} + c$

C. $2\tan^{-1}\sqrt{4x+3} + c$

D. $4\tan^{-1}\sqrt{4x+3} + c$

Answer: C



Watch Video Solution

94. $\int \left(\sqrt{\frac{2+x}{2-x}} \right) dx =$

A. $2\sin^{-1}\left(\frac{x}{2}\right) + \sqrt{4-x^2} + C$

B. $2\sin^{-1}\frac{x}{2} + \sqrt{1-x^2} + C$

C. $2\sin^{-1}\left(\frac{x}{2}\right) - \sqrt{4-x^2} + C$

D. $\sin^{-1}\left(\frac{x}{2}\right) - \sqrt{4 - x^2} + C$

Answer: C



Watch Video Solution

95. If $\int \frac{1}{5 + 4\sin x} dx = A \tan^{-1} [B(5\tan x / 2 + 4)] + \text{then } (A, B) =$

A. $\left(\frac{1}{3}, \frac{1}{3}\right)$

B. $\left(\frac{2}{3}, \frac{1}{3}\right)$

C. $\left(\frac{1}{3}, \frac{2}{3}\right)$

D. $\left(\frac{1}{2}, \frac{2}{3}\right)$

Answer: B



View Text Solution

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

A. $\frac{1}{\sqrt{5}} \log \left| \frac{\sqrt{5} + \tan \frac{x}{2}}{\sqrt{5} - \tan \frac{x}{2}} \right| + c$

B. $\frac{1}{\sqrt{3}} \log \left| \frac{\sqrt{3} + \tan \frac{x}{2}}{\sqrt{3} - \tan \frac{x}{2}} \right| + c$

C. $\frac{1}{\sqrt{5}} \log \left| \frac{\sqrt{3} + \tan \frac{x}{2}}{\sqrt{5} - \tan \frac{x}{2}} \right| + c$

D. $\frac{2}{\sqrt{5}} \log \left| \left(\sqrt{5} \right) + \tan \frac{x}{2} \frac{1}{\sqrt{5} - \tan \frac{x}{2}} \right| + c$

Answer: A



Watch Video Solution

97. If $\int \frac{1}{2 + \cos x} dx = A \tan^{-1} \left(B \cdot \tan \frac{x}{2} \right) + c$ then (A, B) =

A. $\left(\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{2}}\right)$

B. $\left(\frac{1}{\sqrt{3}}, \frac{2}{\sqrt{3}}\right)$

C. $\left(\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}\right)$

D. $\left(\frac{2}{\sqrt{3}}, \frac{1}{\sqrt{3}}\right)$

Answer: D



Watch Video Solution

98. $\int \frac{1}{4 + 5\cos 2\theta} d\theta =$

A. $\frac{1}{6} \log \left| \frac{3 + \tan \theta}{5 - \tan \theta} \right| + c$

B. $\frac{1}{3} \log \left| \frac{2 + \tan \theta}{3 - \tan \theta} \right| + c$

C. $\frac{1}{6} \log \left| \frac{3 + \tan \theta}{3 - \tan \theta} \right| + c$

D. $\frac{1}{2} \log \left| \frac{3 + \tan \theta}{3 - \tan \theta} \right| + c$

Answer: C



Watch Video Solution

99. $\int \frac{1}{2 + \cos 2x} dx =$

A. $\frac{x}{3} + c$

B. $\frac{1}{\sqrt{3}} \tan^{-1} \left(\frac{\tan X}{\sqrt{3}} \right) + C$

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

D. $\frac{1}{\sqrt{2}} \tan^{-1} \left(\frac{\tan X}{\sqrt{2}} \right) + C$

Answer: B



Watch Video Solution

100. $\int \frac{1}{\sin x - \cos x} dx =$

A. $\frac{1}{\sqrt{2}} \log \left| \tan \left(\frac{x}{2} - \frac{\pi}{8} \right) \right| + c$

B. $\frac{1}{\sqrt{3}} \log \left| \tan \left(\frac{x}{2} - \frac{\pi}{8} \right) \right| + c$

C. $\frac{1}{\sqrt{2}} \log \left| \tan \left(\frac{x}{2} + \frac{\pi}{8} \right) \right| + c$

D. $\frac{1}{\sqrt{2}} \log \left| \cos \left(\frac{x}{2} - \frac{\pi}{8} \right) \right| + c$

Answer: A



Watch Video Solution

101. If $\int \frac{1}{3\sin x + 4\cos x} dx = a \log \left| \frac{b + 2\tan \frac{x}{2}}{c - \tan \frac{x}{2}} \right| + K$ then $(a, b, c) =$

A. $\left(\frac{1}{5}, -1, -4 \right)$

B. $\left(\frac{1}{5}, 1, -4\right)$

C. $\left(5, 1, -\frac{1}{4}\right)$

D. $\left(\frac{1}{5}, 1, 2\right)$

Answer: D



Watch Video Solution

102. $\int \frac{1}{\sqrt{3}\sin x + \cos x} dx =$

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

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

C. $\log \left| \tan \left(\frac{x}{2} - \frac{\pi}{2} \right) \right| + c$

D. $\frac{1}{2} \log \left| \tan \left(\frac{x}{2} + \frac{\pi}{12} \right) \right| + c$

Answer: D

[Watch Video Solution](#)

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

A. $\frac{1}{\sqrt{2}} \tan^{-1} \left(\frac{\tan x}{\sqrt{2}} \right) + C$

B. $\frac{1}{\sqrt{3}} \tan^{-1} \left(\frac{\tan x}{\sqrt{3}} \right) + C$

C. $\frac{x}{2} + C$

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

Answer: A

[Watch Video Solution](#)

104. $\int \frac{1}{16\sin^2 x + 25\cos^2 x} dx =$

A. $\frac{1}{40} \tan^{-1} \left(\frac{5}{4} \tan x \right) + c$

B. $\frac{1}{40} \tan^{-1} \left(\frac{4}{5} \tan x \right) + c$

C. $\frac{1}{20} \tan^{-1} \left(\frac{5}{4} \tan x \right) + c$

D. $\frac{1}{20} \tan^{-1} \left(\frac{4}{5} \tan x \right) + c$

Answer: D



Watch Video Solution

105. $\int \frac{1}{1 + \cos^2 x + 2 \cos x \sin x} dx =$

A. $\tan^{-1} (\tan x + 1) + C$

B. $\frac{1}{2} \tan^{-1} (\tan x + 1) + C$

C. $\frac{1}{2} \tan^{-1} \left[\frac{1}{2} (\tan x + 1) \right] + C$

D. $\tan^{-1} \left[\frac{1}{2} (\tan x + 1) \right] + C$

Answer: A

106. $\int \frac{1}{2\sin^2 x + 3\sin x \cos x - 2\cos^2 x} dx =$

A. $\frac{1}{5} \log \left| \frac{2\tan x - 1}{2 + \tan x} \right| + C$

B. $\frac{1}{3} \log \left| \frac{2\tan x - 1}{2 + \tan x} \right| + C$

C. $\frac{1}{2} \log \left| \frac{2\tan x - 3}{\tan x + 1} \right| + C$

D. $\frac{1}{5} \log \left| \frac{2\tan x - 3}{\tan x + 1} \right| + C$

Answer: A

107. $\int \frac{\sin x}{\sin x + \cos x} dx =$

A. $\frac{1}{2}x + \frac{1}{2} \log |\sin x + \cos x| + C$

B. $\frac{1}{2}x - \frac{1}{2} \log |\sin x + \cos x| + C$

C. $\frac{1}{2}x + \log |\sin x + \cos x| + C$

D. $x - \log |\sin x + \cos x| + C$

Answer: B



Watch Video Solution

108. $\int \frac{\cos x}{3\cos x + 4\sin x} dx =$

A. $\frac{3}{25}x + \frac{4}{25} \log |3 \cos x + 4\sin x| + C$

B. $\frac{3}{25}x - \frac{4}{25} \log |3 \cos x + 4\sin x| + C$

C. $\frac{2}{25}x - \frac{4}{25} \log |3 \cos x + 4\sin x| + C$

D. $\frac{1}{25}x - \frac{3}{25} \log |3 \cos x + 4\sin x| + C$

Answer: A



Watch Video Solution

109. $\int \frac{\sin x}{\sin x - \cos x} dx =$

A. $\frac{1}{2}x + \frac{1}{2} \log |\sin x - \cos x| + C$

B. $x + \log |\sin x - \cos x| + c$

C. $\log |\sin x - \cos x| + C$

D. $x + 2 \log |\sin x - \cos x| + C$

Answer: A



Watch Video Solution

110. Evaluate the integrals.

$$\int \frac{1}{1 + \tan x} dx$$

A. $\frac{1}{2} \log |\cos x + \sin x| + \frac{1}{2} x + c$

B. $\frac{1}{2} \log |\cos x + \sin x| - \frac{1}{2} x + c$

C. $\frac{1}{2} \log |\cos x + \tan x| + \frac{1}{2} x + c$

D. $2 \log |\cos x + \sin x| + x + c$

Answer: A



Watch Video Solution

111. $\int \frac{1}{1 + 16x^2} dx =$

A. $\frac{1}{4} \tan^{-1}(4x) + c$

B. $\frac{1}{2} \tan^{-1}(2x) + c$

C. $\frac{1}{2} \tan^{-1}(4x) + c$

D. $\tan^{-1}(4x) + c$

Answer: A



Watch Video Solution

112. If $\int \frac{x^2 - a^2}{x^2 + a^2} dx = x + k \tan^{-1} \frac{x}{a} + c$ then $k =$

A. $x + 2a \tan^{-1}(x/a) + C$

B. $2x - a \tan^{-1}(x/a) + C$

C. $x - 2a \tan^{-1}(x/a) + C$

D. $x + 1/2a \tan^{-1}(x/a) + C$

Answer: C



Watch Video Solution

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

A. $\frac{1}{\sqrt{6}} \log \left| \frac{\sqrt{2}x - \sqrt{3}}{\sqrt{2}x + \sqrt{3}} \right| + C$

B. $\frac{1}{2\sqrt{6}} \log \left| \frac{\sqrt{2}x - \sqrt{3}}{\sqrt{2}x + \sqrt{3}} \right| + C$

C. $\frac{1}{\sqrt{3}} \log \left| \frac{\sqrt{2}x - \sqrt{3}}{\sqrt{2}x + \sqrt{3}} \right| + C$

D. $\frac{1}{\sqrt{2}} \log \left| \frac{\sqrt{2}x - \sqrt{3}}{\sqrt{2}x + \sqrt{3}} \right| + C$

Answer: B

 **Watch Video Solution**

114. $\int \sqrt{4 - x^2} dx =$

A. $\frac{x}{2} \sqrt{4 - x^2} - 2 \sin^{-1} \left(\frac{x}{2} \right) + C$

B. $\frac{x}{2} \sqrt{4 - x^2} + 2 \sin^{-1} \left(\frac{x}{2} \right) + C$

C. $\frac{x}{2} \sqrt{4 - x^2} + 2 \sinh^{-1} \left(\frac{x}{2} \right) + C$

D. $\frac{x}{2} \sqrt{4 + x^2} + 2 \sin^{-1} \left(\frac{x}{2} \right) + C$

Answer: B

 **Watch Video Solution**

115. $\int \frac{1}{(2x-3)(3x-2)} dx =$

A. $\frac{-1}{5} \log \left| \frac{2x-3}{3x-2} \right| + C$

B. $\frac{1}{5} \log \left| \frac{2x-3}{3x-2} \right| + C$

C. $\frac{1}{3} \log \left| \frac{2x-3}{3x-2} \right| + C$

D. $-\frac{1}{3} \log \left| \frac{2x-3}{3x-2} \right| + C$

Answer: B



Watch Video Solution

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

A. $\frac{1}{3} \left[\tan^{-1} x - \frac{1}{2} \tan^{-1} \frac{x}{2} \right] + c$

B. $\frac{1}{3} \left[\tan^{-1} x + \frac{1}{2} \tan^{-1} \frac{x}{2} \right] + c$

C. $\frac{1}{3} \left[\tan^{-1} x - \frac{x}{2} + 2 \tan^{-1} x \right] + c$

D. $\frac{2}{3} \left[\tan^{-1} x - \frac{3}{2} \tan^{-1} \frac{x}{2} \right] + c$

Answer: A



Watch Video Solution

117. $\int \frac{1}{x(1+x^{10})} dx =$

A. $\frac{1}{10} \log |1+x^{10}| + C$

B. $\frac{1}{10} \log \left| \frac{x^{10}}{1+x^{10}} \right| + C$

C. $\frac{1}{10} \log \left| \frac{1+x^{10}}{x^{10}} \right| + C$

D. $\frac{1}{5} \log |1+x^{10}| + C$

Answer: B



Watch Video Solution

118. $\int \frac{1}{a^4 - x^4} dx =$

A. $\left(-\frac{1}{2a^3}, \frac{1}{4a^3} \right)$

B. $\left(\frac{1}{2a^3}, \frac{1}{4a^3} \right)$

C. $\left(\frac{1}{2a^3}, \frac{1}{4a} \right)$

D. $\left(\frac{1}{a}, \frac{1}{2a} \right)$

Answer: B



Watch Video Solution

119. $\int \frac{dx}{\sqrt{x}(x+4)} = f(x) + c$ then $f(x) =$

A. $\frac{1}{3} \tan^{-1} \sqrt{x}$

B. $\frac{2}{3} \tan^{-1} \left(\frac{\sqrt{x}}{3} \right)$

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

D. $\tan^{-1} \left(\frac{\sqrt{x}}{2} \right)$

Answer: D



Watch Video Solution

120. If $\int \frac{4e^x + 6e^{-x}}{9e^x - 4e^{-x}} dx = Ax + B \log(9e^{2x} - 4) + c$ then (A,B) =

A. $\left(-\frac{3}{2}, \frac{35}{36} \right)$

B. $\left(\frac{3}{2}, \frac{35}{36} \right)$

C. $\left(-\frac{3}{2}, \frac{35}{36} \right)$

D. $\left(\frac{3}{2}, -\frac{35}{36} \right)$

Answer: A



Watch Video Solution

121. If $\int e^x \cdot 2^{3\log_2 x} dx = e^x \cdot f(x) + C$ then $f(x) =$

A. $x^3 - 3x^2 + 6x - 6$

B. $x^3 + 3x^2 - 6x - 6$

C. $x^3 - 3x^2 - 6x + 6$

D. $x^3 + 3x^2 + 6x + 6$

Answer: A



Watch Video Solution

122. If $\int e^{2x} \cdot x^3 dx = \frac{e^{2x}}{16} [ax^3 + bx^2 + cx + d] + K$ then $(a, b, c, d) =$

A. (8, -12, 12, -6)

B. (8, 12, 12, 6)

C. (8, -12, -12, 6)

D. (8, -12, 12, 6)

Answer: A



Watch Video Solution

123. $\int e^{\log x} \cdot \sin x \, dx =$

A. $-x \cos x + \sin x + c$

B. $x \cos x - \sin x + c$

C. $x \sin x - \cos x + c$

D. $-x \sin x + \cos x + c$

Answer: A

124. Evaluate $\int x^3 \sin x \, dx$

A. $-\frac{x^3 \cos 3x}{3} + \frac{3x^2 \sin 3x}{9} + \frac{6x \cos 3x}{27} - \frac{2}{27} \sin 3x + c$

B. $-\frac{x^3 \cos 3x}{3} - \frac{3x^2 \sin 3x}{9} + \frac{6x \cos 3x}{27} + \frac{2}{27} \sin 3x + c$

C. $-\frac{x^3 \cos 3x}{3} - \frac{3x^2 \sin 3x}{9} - \frac{6x \cos 3x}{27} - \frac{2}{27} \sin 3x + c$

D. $-\frac{x^3 \cos 3x}{3} - \frac{3x^2 \sin 3x}{9} - \frac{6x \cos 3x}{27} + c$

Answer: A

125. $\int e^x (\tan x - \log \cos x) \, dx =$

A. $e^x \log \sec x + c$

B. $e^x \log \tan x + c$

C. $e^x \tan x + c$

D. $e^x \sec x + c$

Answer: A



Watch Video Solution

126. $\int e^{-x} (1 - \tan x) \sec x \, dx =$

A. $e^{-x} \sec x + c$

B. $e^{-x} \tan x + c$

C. $-e^{-x} \tan x + c$

D. $-e^{-x} \sec x + c$

Answer: D



Watch Video Solution

127. $\int x \sec x \tan x \, dx =$

A. $x \sec x + \log \left| \tan \left(\frac{\pi}{2} + \frac{x}{2} \right) \right| + c$

B. $x \sec x - \log \left| \tan \left(\frac{\pi}{2} + \frac{x}{2} \right) \right| + c$

C. $x \sec x - \log \left| \tan \left(\frac{\pi}{4} + \frac{x}{2} \right) \right| + c$

D. $x \sec x + \log \left| \tan \frac{x}{2} \right| + c$

Answer: C



View Text Solution

128. $\int \sin x \cdot \log (\sin x) \, dx. =$

A. $-\cos x \cdot \log (\sin x) + \log \left| \tan \frac{x}{2} \right| + \cos x + c$

B. $-\cos x \cdot \log (\sin x) + \cos x + c$

C. $-\cos x \cdot \log (\sin x) - \log \left| \tan \frac{x}{2} \right| + c$

$$D. -\cos x \cdot \log(\sin x) + \log \left| \cot \frac{x}{2} \right| + \cos x + c$$

Answer: A



Watch Video Solution

129. If $\int \sqrt{x} \log x \, dx = K \cdot x^{3/2} f(x) + c$ then $K, f(x) =$

A. $\frac{1}{3}, \log x + \frac{2}{3}$

B. $\frac{1}{3}, \log x - \frac{2}{3}$

C. $\frac{2}{3}, \log x + \frac{2}{3}$

D. $\frac{2}{3}, \log x - \frac{2}{3}$

Answer: D



View Text Solution

130. $\int x^4(1 + \log x) dx =$

A.

B.

C.

D.



Watch Video Solution

131. $\int \cos x \cdot \log \left(\tan \frac{x}{2} \right) dx =$

A. $\sin x \cdot \log \tan x - x + c$

B. $-\sin x \cdot \log \tan \frac{x}{2} + x + c$

C. $-\sin x \cdot \log \tan \frac{x}{2} - x + c$

D. $\sin x \cdot \log \tan \frac{x}{2} - x + c$

Answer: D



Watch Video Solution

132. $\int \cos \sqrt{x} dx =$

A. $2 \left[\sqrt{x} \sin \sqrt{x} + \cos \sqrt{x} \right] + c$

B. $2 \left[\sqrt{x} \sin \sqrt{x} - \cos \sqrt{x} \right] + c$

C. $2 \left[\sqrt{x} \cos \sqrt{x} + \sin \sqrt{x} \right] + c$

D. $2 \left[\sqrt{x} \cos \sqrt{x} - \sin \sqrt{x} \right] + c$

Answer: A



Watch Video Solution

133. $\int e^{3\sqrt{x}} dx =$

A. $3e^{3\sqrt{x}} \left[(3\sqrt{x})^2 + 2 \cdot 3\sqrt{x} + 2 \right] + c$

B. $3e^{3\sqrt{x}} \left[(3\sqrt{x})^2 - 2 \cdot 3\sqrt{x} + 2 \right] + c$

C. $3e^{3\sqrt{x}} \left[(3\sqrt{x})^2 + 4 \cdot 3\sqrt{x} - 3 \right] + c$

D. $3e^{3\sqrt{x}} \left[(3\sqrt{x})^2 - 6 \cdot 3\sqrt{x} + 4 \right] + c$

Answer: B

 **Watch Video Solution**

134. $\int e^{\sin x} \cdot \sin 2x \, dx =$

A. $2e^{\sin x} (\sin x + 1) + c$

B. $e^{\sin x} (\sin x + 2) + c$

C. $e^{\sin x} (2\sin x - 2) + c$

D. $e^{\sin x} (3 \sin x - 2) + c$

Answer: C

[Watch Video Solution](#)

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

A. $x \left[(\log x)^2 - \log x - 2 \right] + c$

B. $x \left[(\log x)^2 - 2 \log x + 2 \right] + c$

C. $x \left[(\log x)^2 - 3 \log x - 3 \right] + c$

D. $x \left[(\log x)^2 + \log x - 2 \right] + c$

Answer: B

[Watch Video Solution](#)

136. $\int \cos^{-1}(2x^2 - 1) dx =$

A. $2 \left(x \sin^{-1} x + \sqrt{1 - x^2} \right) + c$

B. $2 \left(x \cos^{-1} x + \sqrt{1 - x^2} \right) + c$

C. $2 \left(x \cos^{-1} x - \sqrt{1 - x^2} \right) + c$

D. $2 \left(x \sin^{-1} x - \sqrt{1 - x^2} \right) + c$

Answer: C



Watch Video Solution

137. $\int \cosh^{-1} \left(\frac{x}{3} \right) dx =$

A. $x \cosh^{-1} \frac{x}{3} + \sqrt{x^2 - 9} + c$

B. $x \cosh^{-1} \frac{x}{3} + \sqrt{x^2 - 3} + c$

C. $x \cosh^{-1} \frac{x}{3} - \sqrt{x^2 - 9} + c$

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

Answer: C



Watch Video Solution

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

A. $x + \sqrt{1-x^2} \sin^{-1} x + c$

B. $x - \sin^{-1} x + c$

C. $x - \sqrt{1-x^2} \sin^{-1} x + c$

D. $\frac{x^2}{2} \sin^{-1} x - \sqrt{1-x^2} + c$

Answer: C



Watch Video Solution

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

$x \tan^{-1} x - \frac{1}{2} \log(1+x^2) + f(x) + c$ then $f(x) =$

A. $-\frac{\tan^{-1} x}{2}$

B. $-\frac{1}{2} (\tan^{-1} x)^2$

C. $\frac{\tan^{-1}x}{2}$

D. $\frac{(\tan^{-1}x)^2}{2}$

Answer: B



View Text Solution

140. If $I_1 = \int \sin^{-1} \left(\frac{2x}{1+x^2} \right) dx$,

$I_2 = \int \cos^{-1} \left(\frac{1-x^2}{1+x^2} \right) dx$,

$I_3 = \int \tan^{-1} \left(\frac{2x}{1-x^2} \right) dx$, then $I_1 + I_2 - I_3 =$

A. $2x \tan^{-1} x - \log(1+x^2) + c$

B. $2 \left[x \tan^{-1} x - \log(1+x^2) \right] + c$

C. $2x \tan^{-1} x + \log(1+x^2) + c$

D. 0

Answer: A



Watch Video Solution

141. If $\int e^x (x^2 - 5x + 8) \, dx = e^x f(x) + c$ then $f(x) =$

A. $x^2 - 5x + 12$

B. $x^2 + 7x + 15$

C. $x^2 - 7x - 15$

D. $x^2 - 7x + 15$

Answer: D



Watch Video Solution

142. $\int e^x \frac{x-1}{(x+2)^4} dx =$

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

B. $\frac{e^x}{(x+2)^4} + c$

C. $-\frac{e^x}{(x+2)^3} + c$

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

Answer: A



Watch Video Solution

143. $\int e^{-\frac{x}{2}} \frac{\sqrt{1-\sin x}}{1+\cos x} dx =$

A. $e^{-x/2} \sec \frac{x}{2} + c$

B. $-e^{-x/2} \sec \frac{x}{2} + c$

C. $e^{x/2} \sec \frac{x}{2} + c$

D. $-e^{x/2} \sec \frac{x}{2} + c$

Answer: B



Watch Video Solution

144. $\int e^{2x} \left(\frac{\cot 2x - 1}{\cos x \sin x} \right) dx =$

A. $e^{2x} \operatorname{cosec} 2x + c$

B. $e^{2x} \cot 2x + c$

C. $-e^{2x} \operatorname{cosec} 2x + c$

D. $e^x \operatorname{cosec} 2x + c$

Answer: C



Watch Video Solution

145. $\int \frac{2x + \sin 2x}{1 + \cos 2x} dx =$

A. $x \sin 2x + c$

B. $-x \tan x + c$

C. $x \sec x + c$

D. $x \tan x + c$

Answer: D



Watch Video Solution

146. $\int \frac{x - \sin x}{1 - \cos x} dx =$

A. $x \cot \frac{x}{2} + c$

B. $-x \cot \frac{x}{2} + c$

C. $x \tan \frac{x}{2} + c$

D. $\frac{-x}{1 - \cos x} + c$

Answer: B



Watch Video Solution

147. $\int e^{3x} \cdot \sin 5x \, dx =$

A. $\frac{e^{3x}}{34} [3 \sin 5x + 5 \cos 5x] + c$

B. $\frac{e^{3x}}{34} [3 \sin 5x - \cos 5x] + c$

C. $\frac{e^{3x}}{34} [5 \sin 5x + 3 \cos 3x] + c$

D. $\frac{e^{3x}}{34} [5 \sin 5x - 3 \cos 5x] + c$

Answer: B



Watch Video Solution

148. $\int e^{x/2} \sin\left(\frac{\pi}{4} + \frac{\pi}{2}\right) dx =$

A. $\sqrt{2}e^{(x/2)}\sin\frac{x}{2} + c$

B. $\sqrt{2}e^{(x/2)}\cos\frac{x}{2} + c$

C. $-\sqrt{2}e^{(x/2)}\sin\frac{x}{2} + c$

D. $-\sqrt{2}e^{(x/2)}\cos\frac{x}{2} + c$

Answer: A



Watch Video Solution

149. $\int \sin(\log x) dx =$

A. $x [\sin (\log x) + \cos (\log x)] + c$

B. $x [\sin (\log x) - \cos (\log x)] + c$

C. $\frac{x}{2} [\sin (\log x) + \cos (\log x)] + c$

D. $\frac{x}{2} [\sin (\log x) - \cos (\log x)] + c$

Answer: D



Watch Video Solution

150. If $\int e^x .(2\sin 3x + 5 \cos 3x) dx$

$= \frac{e^x}{a} [b \sin 3x + c \cos 3x] + K$ then $(a, b, c) =$

A. $(10, 17, 1)$

B. $\left(\frac{1}{10}, 17, -1 \right)$

C. $\left(\frac{1}{10}, -17, 1 \right)$

D. $(10, 17, -1)$

Answer: D



Watch Video Solution

151. $\int 2^x \cdot \sin 3x \, dx =$

- A. $\frac{2^x}{(\log 2)^2 + 9} [(\log 2) \cdot \sin 3x - 3 \cos 3x] + c$
- B. $\frac{2^x}{(\log 2)^2 + 9} [(\log 2) \cdot \sin 3x + 3 \cos 3x] + c$
- C. $\frac{2^x}{(\log 2)^2 + 9} [3 \sin 3x - (\log 2) \cdot \cos 3x] + c$
- D. $\frac{2^x}{(\log 2)^2 + 9} [3 \sin 3x + (\log 2) \cdot \cos 3x] + c$

Answer: A



Watch Video Solution

152. Evaluate $\int \sin^4 x \, dx$.

- A. $\frac{\sin^3 x \cos x}{4} - \frac{3}{8} \sin x \cos x - \frac{3}{8} x + c$
- B. $\frac{1}{4} \sin^3 x \cos x + \frac{3}{8} x + c$
- C. $-\frac{1}{4} \sin^3 x \cos x - \frac{3}{8} \sin x \cos x + \frac{3}{8} x + c$
- D. $-\frac{1}{4} \sin^3 x \cos x - \frac{3}{8} x + c$

Answer: C



Watch Video Solution

153. If $\int \tan^7 x \, dx = f(x) + \log |\cos x| + c$ then $f(x) =$

A. $\frac{1}{6}\tan^6 x + \frac{1}{4}\tan^4 x + \frac{1}{2}\tan^2 x$

B. $\frac{1}{6}\tan^6 x + \frac{1}{4}\tan^4 x - \frac{1}{2}\tan^2 x$

C. $\frac{1}{6}\tan^6 x + \frac{1}{4}\tan^4 x + \tan^2 x$

D. $\frac{1}{6}\tan^6 x - \frac{1}{4}\tan^4 x + \frac{1}{2}\tan^2 x$

Answer: D



Watch Video Solution

154. $\int \sec^4 x \, dx =$

A. $\frac{1}{3}\sec^2x \tan x - \frac{2}{3} \tan x + c$

B. $\frac{1}{3}\sec^2x \tan x + \frac{2}{3} \tan x + c$

C. $\frac{1}{3}\sec^2x \tan x - \frac{1}{3} \tan x + c$

D. $\frac{1}{3}\sec^2x \tan x - \frac{1}{3}x + c$

Answer: B



Watch Video Solution

155. If $I_n = \int \sec^n x \, dx$ then $I_8 - \frac{6}{7}I_6 =$

A. $\frac{\sec^6 x \tan x}{7}$

B. $\frac{-\sec^6 x \tan x}{7}$

C. $\frac{\sec^6 x \tan x}{8}$

D. $\frac{-\sec^6 x \tan x}{9}$

Answer: A

[Watch Video Solution](#)

156. If $I_n = \int \tan^n x \, dx$ then $I_0 + 2I_2 + I_4 =$

A. $\frac{1}{3} \tan^3 x + \tan x$

B. $\frac{1}{3} \tan^3 x - \tan x$

C. $-\frac{1}{3} \tan^3 + \tan x$

D. $-\frac{1}{3} \tan^3 x - \tan x$

Answer: A

[Watch Video Solution](#)

157. If $I_n = \int \frac{\cos nx}{\cos x} \, dx$ then $I_n =$

A. $-\frac{2}{(n-1)} \cos(n-1)x + I_{n-2}$

B. $\frac{2}{(n-1)} \cos(n-1)x + I_{n-2}$

C. $\frac{2}{(n-1)} \sin(n-1)x - I_{n-2}$

D. $-\frac{2}{(n-1)} \sin(n-1)x + I_{n-2}$

Answer: C



View Text Solution

158. If $I_{m,n} = \int x^m (\log x)^n dx$ then

$$I_{m,n} - \frac{x^{m+1}}{(m+1)} (\log x)^n =$$

A. $\frac{n}{m+1} \cdot I_{m,n-1}$

B. $\frac{m}{n+1} \cdot I_{m,n-1}$

C. $-\frac{n}{m+1} \cdot I_{m,n-1}$

D. $\frac{n}{m+1} \cdot I_{m-1,n-1}$

Answer: C



Watch Video Solution

159. If $I_n = \int (\log x)^n dx$ then $I_n + nI_{n-1} =$

A. $x(\ln x)^{n-1}$

B. $x(\ln x)^n$

C. $nx(\ln x)^n$

D. $nx(\ln x)^{n-1}$

Answer: B



Watch Video Solution

160. Statement-I:

$$\int \sec^n x \, dx = \frac{\sec^{n-2} x \tan x}{n-1} + \frac{n-2}{n-1} I_{n-2}$$

Statement- II :

$$\int \sec^3 x \, dx = \frac{\sec x \tan x}{2} + \frac{1}{2} \log |\sec x - \tan x| + k$$

Which of the following is true ?

- A. Only I
- B. Only II
- C. Both I and II
- D. Neither I nor II

Answer: A



Watch Video Solution

161. If $\int \frac{x\sqrt{x} - 1}{\sqrt{x} - 1} dx = ax^2 + bx^{3/2} + cx + d$ then ascending order of a, b, c, is

- A. a, b, c
- B. b, c, a
- C. c, a, b
- D. d, b, a

Answer: A



Watch Video Solution

162. Match the following

List - I

List II

$$(A) \int \frac{f^1(x)}{f(x)} dx =$$

$$(1) 2\sqrt{f(x)} + c$$

$$(B) \int \frac{f^1(x)}{\sqrt{f(x)}} dx =$$

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

$$(C) \int f^1(x) \sqrt{f(x)} dx =$$

$$(3) \log |f(x)| + c$$

$$(D) \int f^1(x) \cdot (f(x))^2 dx =$$

$$(4) \frac{1}{3} (f(x))^3 + c$$

The correct match for list - I from List - II is

$$\begin{array}{cccc} A & B & C & D \\ \text{A.} & 1 & 2 & 3 & 4 \end{array}$$

$$\begin{array}{cccc} A & B & C & D \\ \text{B.} & 3 & 1 & 2 & 4 \end{array}$$

$$\begin{array}{cccc} A & B & C & D \\ \text{C.} & 3 & 5 & 2 & 4 \end{array}$$

$$\begin{array}{cccc} A & B & C & D \\ \text{D.} & 5 & 4 & 3 & 1 \end{array}$$

Answer: B



Watch Video Solution

163. Assertion (A) :

If $I_n = \int \tan^n x dx$ then $5(I_4 + I_6) = \tan^5 x$ Reason (R) :

$\int \tan^n x dx$ then $I_n = \frac{\tan^{n-1} x}{n} - I_{n-2}$ where $n \in \mathbb{N}$

The correct answer is

- A. Both (A) and (R) are true and (R) is the correct explanation of (A)
- B. Both (A) and (R) are true and (R) is not the correct explanation of (A)
- C. (A) is true but (R) is false
- D. (A) is false but (R) is true

Answer: C



Watch Video Solution

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

A. $\frac{1}{4} \sqrt{4+x^2} + c$

B. $\frac{-1}{4} \sqrt{4+x^2} + c$

C. $\frac{-1}{4x} \sqrt{4+x^2} + c$

D. $\frac{9}{4x} \sqrt{4+x^2} + c$

Answer: C



Watch Video Solution

165. $\int \sec^2 x \operatorname{cosec}^4 x \, dx =$

$-\frac{1}{3} \cot^3 x + k \tan x - 2 \cot x + c \Rightarrow k =$

A. 4

B. 3

C. 2

D. 1

Answer: D



Watch Video Solution

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

A. $2\sin^{-1}\sqrt{x} + c$

B. $2\sin^{-1}x + c$

C. $2x\sin^{-1}x + c$

D. $\sin^{-1}x + c$

Answer: A



View Text Solution

167. $\int \frac{(x^2 + 1)}{x^4 + 7x^2 + 1} dx =$

A. $\frac{1}{3} \tan^{-1} \left(\frac{x^2 - 1}{3x} \right) + c$

B. $\tan^{-1} \left(\frac{x^2 - 1}{3x} \right) + c$

C. $\frac{1}{3} \tan^{-1} \left(\frac{x^2 - 1}{3x} \right) + c$

D. $\frac{1}{\sqrt{3}} \tan^{-1} \left(\frac{x^2 - 1}{3x} \right) + c$

Answer: A



Watch Video Solution