doubtnut
India's Number 1 Education App

MATHS

BOOKS - RS AGGARWAL MATHS (HINGLISH)

INTEGRATION USING PARTIAL FRACTIONS

Solved Examples

1. Resolve $\frac{2x-3}{(x+3)(x+1)}$ into partial fractions .

Watch Video Solution

2. Resolve $\frac{x^3-2x^2-13x-12}{x^2-3x-10}$ into partial fractions.

Watch Video Solution

3. Resolve $\frac{16}{(x-2)(x+2)^2}$ into partial fractions.

Watch Video Solution

4. Resolve $\frac{2x+1}{(x-1)(x^2+1)}$ into partial fractions.

Watch Video Solution

5. Evaluate: $\int \frac{x-1}{(x+1)(x-2)}\,dx$

Watch Video Solution

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

Watch Video Solution

7. Evaluate: $\int \frac{3x-2}{(x+1)^2(x+3)}\,dx$

Watch Video Solution

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

Watch Video Solution

9. Evaluate: $\int \frac{x^4\,dx}{(x-1)(x^2+1)}$

Watch Video Solution

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

Watch Video Solution

11. Evaluate: $\int \frac{x^3 - 1}{x^3 + x} dx$

Watch Video Solution

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

Watch Video Solution

13. Evaluate $\int \frac{dx}{x\left\{6(\log x)^2 + 7\log x + 2\right\}}.$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

19. Evaluate: $\int \frac{(x-1)(x-2)(x-3)}{(x-4)(x-5)(x-6)} dx$

Watch Video Solution

20. Evaluate: $\int \frac{(x^2+1)(x^2+2)}{(x^2+3)(x^2+4)} dx$

Watch Video Solution

21. Find : $\int \frac{(3\sin\theta - 2)\cos\theta}{5 - \cos^2\theta - 4\sin\theta} dth\eta\theta.$

Watch Video Solution

22. Evaluate: $\int \frac{\tan\theta + \tan^3\theta}{1 + \tan^3\theta} dth\eta$

Watch Video Solution

23. Evaluate $\int \frac{dx}{(\sin x - \sin 2x)}$.

Watch Video Solution

24. $\int \frac{1 - \cos x}{\cos x(1 + \cos x)} dx$

Watch Video Solution

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

Watch Video Solution

Exercise 15 A

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

8. Evaluate: $\int \frac{x^2+5x+3}{x^2+3x+2} dx$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

11. Evaluate: $\int \frac{3_{4x}-x^2}{(x+2)(x-1)}dx$

Watch Video Solution

12. Evaluate: $\int \frac{x^3}{(x-1)(x-2)}\,dx$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

19. Evaluate: $\int \frac{e^x}{e^{2x} + 5e^x + 6} dx$

Watch Video Solution

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

Watch Video Solution

21. $\int \frac{2\log x}{x\left[2(\log x)^2 - \log x - 3\right]} dx$

Watch Video Solution

22. $\int \frac{\operatorname{cosec}^2 x}{(1 - \cot^2 x)} dx = ?$

Watch Video Solution

23. $\int \frac{2\log x}{x\left[2(\log x)^2 - \log x - 3\right]} dx$

Watch Video Solution

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

Watch Video Solution

25. $\frac{e^x}{e^x(e^x-1)}dx$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

29. $\int \frac{(2x+9)}{(x+2)(x-3)^2} dx$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

35. $\int \frac{(5x+8)}{x^2(3x+8)} dx$

Watch Video Solution

36. $\int \frac{(5x^2-18x+17)}{(x-1)^2(2x-3)} dx$

Watch Video Solution

37. $\int \frac{8}{(x+2)(x^2+4)} dx$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

41. $\int \frac{dx}{(x^3 - 1)} dx$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

44. $\int \frac{17}{(2x + 1)(x^2 + 4)} dx$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

48. $\int \frac{dx}{x(x^5+1)}$

Watch Video Solution

49. $\int \frac{dx}{x(x^6+1)}$

Watch Video Solution

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

Watch Video Solution

51. $\int \frac{1}{\cos x(5-4\sin x)} dx$

Watch Video Solution

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

Watch Video Solution

53. $\int \frac{\tan x}{(1-\sin x)} dx$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

56. $\int \frac{x^4}{(x^2+1)(x^2+9)(x^2+16)} dx$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

Exercise 15 B

1. $\int x^{-6} \quad \mathrm{dx}$

Watch Video Solution

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

Watch Video Solution

3. $\int \sin 3x dx$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

7. $\int \sin^2 dx$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

11. $\int \frac{(1+\tan x)}{(x-\log \cos x)} dx.$

Watch Video Solution

12. $\int \frac{(1-\cot x)}{(1+\cot x)} dx.$

Watch Video Solution

13. $\int \frac{(1+\cot x)}{(x+\log \sin x)} dx.$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

21. $\int \cos x \cos 3x dx$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

24. $\int e^x (\tan x - \log(\cos x)) dx =$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

27. Evaluate: $\int \frac{\cot x}{\sqrt{\sin x}} dx$

Watch Video Solution

28. $\int \frac{\sec^2 x}{\text{cosec}^2 x} dx$

Watch Video Solution

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

Watch Video Solution

30. $\int \frac{dx}{\left(\sqrt{x+2}+\sqrt{x+1}\right)}$

Watch Video Solution

31. $\int 2^x \quad \mathrm{dx}$

Watch Video Solution

32. $\int \frac{(1+\tan x)}{(x+\log \sec x)} dx$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

35. $\int \frac{dx}{\sqrt{9x^2+16}}$

Watch Video Solution

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

Watch Video Solution

37. $\int \frac{dx}{\sqrt{4x^2 - 25}}$

Watch Video Solution

38. Write a value of $\int \sqrt{4 - x^2}\, dx$

Watch Video Solution

39. Write a value of $\int \sqrt{9 + x^2}\, dx$

Watch Video Solution

40. $\int \sqrt{x^2 - 16} dx = ?$

Watch Video Solution

Objective Questions I

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

A. $\tan^{-1}\frac{x}{3} + C$

B. $\frac{1}{3}\tan^{-1}\frac{x}{3} + C$

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

D. None of these

Answer: B

Watch Video Solution

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

A. $\frac{1}{32}\tan^{-1}4x + C$

B. $\frac{1}{16}\tan^{-1}\frac{x}{2}+C$

C. $\frac{1}{8}\tan^{-1}2x+C$

D. $\frac{1}{4}\tan^{-1}\frac{x}{2}+C$

Answer: C

Watch Video Solution

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

A. $\frac{1}{2}\tan^{-1}\frac{2x}{3}+C$

B. $\frac{1}{6}\tan^{-1}\frac{2x}{3}+C$

C. $\frac{1}{6}\tan^{-1}\frac{3x}{2}+C$

D. None of these

Answer: B

Watch Video Solution

4. Evaluate: (i) $\int \frac{\sin x}{1+\cos^2 x}\,dx$ (ii) $\int \frac{2x^3}{4+x^8}\,dx$

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

B. $\cot^{-1}(\cos x)+C$

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

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

Answer: A

Watch Video Solution

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

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

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

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

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

Answer: C

Watch Video Solution

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

A. $\cot^{-1}(e^x) + C$

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

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

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

Answer: B

Watch Video Solution

7. Evaluate: $\int \frac{3x^5}{1+x^{12}} dx$

A. $\tan^{-1} x^6 + C$

B. $\frac{1}{4} \tan^{-1}(e^x) + C$

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

D. None of these

Answer: C

Watch Video Solution

8. $\int \frac{2x^3}{(4+x^8)} dx = ?$

A. $\frac{1}{2} \tan^{-1} \frac{x^4}{2} + C$

B. $\frac{1}{4}\tan^{-1}\frac{x^4}{2}+C$

C. $\frac{1}{2}\tan^{-1}x^4+C$

D. None of these

Answer: B

Watch Video Solution

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

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

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

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

D. None of these

Answer: A

Watch Video Solution

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

A. $\frac{1}{\sqrt{23}} \tan^{-1}\left(\frac{4x+1}{\sqrt{23}}\right) + C$

B. $\frac{1}{\sqrt{23}} \tan^{-1}\left(\frac{x+1}{\sqrt{23}}\right) + C$

C. $\frac{2}{\sqrt{23}} \tan^{-1}\left(\frac{4x+1}{\sqrt{23}}\right) + C$

D. None of these

Answer: C

Watch Video Solution

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

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

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

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

D. None of these

Answer: A

Watch Video Solution

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

A. $\frac{x}{4} - \frac{1}{8}\tan^{-1}\frac{x}{3} + C$

B. $\frac{x}{4} - \frac{3}{8}\tan^{-1}\frac{x}{3} + C$

C. $\frac{x}{4} - \frac{3}{8}\tan^{-1}\frac{2x}{3} + C$

D. None of these

Answer: C

Watch Video Solution

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

A. $x - 5\tan^{-1}\frac{x}{2} + C$

B. $x - \frac{5}{2}\tan^{-1}\frac{x}{2} + C$

C. $x - \frac{5}{2}\tan^{-1}\frac{5x}{2} + C$

D. None of these

Answer: B

Watch Video Solution

14. Evaluate: (i) $\int \frac{1}{4 + 9x^2} dx$ (ii) $\int \frac{1}{9x^2 - 4} dx$ (iii) $\int \frac{1}{16 - 9x^2} dx$

A. $\frac{2}{3}\tan^{-1}\frac{3x}{2} + C$

B. $\frac{1}{6}\tan^{-1} 3x + C$

C. $\frac{1}{6}\tan^{-1} \frac{3x}{2} + C$

D. None of these

Answer: C

Watch Video Solution

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

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

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

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

D. None of these

Answer: B

Watch Video Solution

16. $\int \frac{dx}{(\sin^4 x + \cos^4 x)}$

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

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

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

D. None of these

Answer: A

Watch Video Solution

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

A. $\tan^{-1} \frac{(x^2 - 1)}{\sqrt{3}} + C$

B. $\frac{1}{\sqrt{3}}\tan^{-1}\frac{(x^2-1)}{\sqrt{3}}+C$

C. $\frac{1}{\sqrt{3}}\tan^{-1}\frac{(x^2-1)}{\sqrt{3}x}+C$

D. None of these

Answer: C

Watch Video Solution

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

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

B. x^2+C

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

D. None of these

Answer: A

Watch Video Solution

19. $\int \frac{dx}{(1-9x^2)} = ?$

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

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

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

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

Answer: C

Watch Video Solution

20. $\int \frac{dx}{(16-4x^2)} = ?$

A. $\frac{1}{8}\log\left|\frac{2-x}{2+x}\right| + C$

B. $\frac{1}{16}\log\left|\frac{2-x}{2+x}\right|+C$

C. $\frac{1}{8}\log\left|\frac{2+x}{2-x}\right|+C$

D. $\frac{1}{6}\log\left|\frac{2+x}{2-x}\right|+C$

Answer: D

Watch Video Solution

21. $\int\frac{x^2}{(1-x^6)}dx = ?$

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

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

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

D. None of these

Answer: A

Watch Video Solution

22. $\int \frac{x}{(1-x^4)} dx = ?$

A. $\frac{1}{4}\log\left|\frac{1+x^2}{1-x^2}\right| + C$

B. $\frac{1}{4}\log\left|\frac{1-x^2}{1+x^2}\right| + C$

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

D. None of these

Answer: A

Watch Video Solution

23. $\int \frac{x^2}{(a^6-x^6)} dx = ?$

A. $\frac{1}{3a^3}\log\left|\frac{a^3+x^3}{a^3-x^3}\right| + C$

B. $\frac{1}{6a^3}\log\left|\frac{a^3+x^3}{a^3-x^3}\right|+C$

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

D. None of these

Answer: B

Watch Video Solution

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

A. $\frac{1}{4}\log\left|\frac{3+x}{3-x}\right|+C$

B. $\frac{1}{4}\log\left|\frac{1+x}{1-x}\right|+C$

C. $\frac{1}{4}\log\left|\frac{3+x}{1-x}\right|+C$

D. None of these

Answer: C

Watch Video Solution

25. $\int \frac{dx}{(\cos^2 x - 3\sin^2 x)} = ?$

A. $\frac{1}{\sqrt{3}}\log\left|\frac{\sqrt{3}+\tan x}{\sqrt{3}-\tan x}\right| + C$

B. $\frac{1}{4}\log\left|\frac{1-\sqrt{3}+\tan x}{1+\sqrt{3}-\tan x}\right| + C$

C. $\frac{1}{2\sqrt{3}}\log\left|\frac{1+\sqrt{3}\tan x}{1-\sqrt{3}\tan x}\right| + C$

D. None of these

Answer: C

Watch Video Solution

26. $\int \frac{\operatorname{cosec}^2 x}{(1-\cot^2 x)}dx = ?$

A. $\frac{1}{2}\log\left|\frac{1+\cot x}{1-\cot x}\right| + C$

B. $-\frac{1}{2}\log\left|\frac{1+\cot x}{1-\cot x}\right|+C$

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

D. None of these

Answer: B

Watch Video Solution

27. $\int\frac{dx}{(4x^2-1)}=?$

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

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

C. $\frac{1}{4}\log\left|\frac{2x-1}{2x+1}\right|+C$

D. None of these

Answer: C

Watch Video Solution

28. $\int \frac{x}{(x^4 - 16)} dx = ?$

A. $\frac{1}{4} \log \left| \frac{x^2 + 4}{x^2 - 4} \right. + C$

B. $\frac{1}{16} \log \left| \frac{x^2 + 4}{x^2 - 4} \right. + C$

C. $\frac{1}{16} \log \left| \frac{x^2 - 4}{x^2 + 4} \right. + C$

D. None of these

Answer: C

Watch Video Solution

29. $\int \frac{dx}{(\sin^2 x - 4 \cos^2 x)} = ?$

A. $\frac{1}{4} \log \left| \frac{\tan x - 2}{\tan x + 2} \right| + C$

B. $\frac{1}{4}\log\left|\frac{\tan x+2}{\tan x-2}\right|+C$

C. $\frac{1}{4}\log\left|\frac{1-\tan x}{1+\tan x}\right|+C$

D. None of these

Answer: A

Watch Video Solution

30. $\int\frac{dx}{(4\sin^2 x+5\cos^2 x)}=?$

A. $\frac{1}{2}\tan^{-1}\left(\frac{\tan x}{\sqrt{5}}\right)+C$

B. $\frac{1}{\sqrt{5}}\tan^{-1}\left(\frac{\tan x}{\sqrt{5}}\right)+C$

C. $\frac{1}{2\sqrt{5}}\tan^{-1}\left(\frac{2\tan x}{\sqrt{5}}\right)+C$

D. None of these

Answer: C

Watch Video Solution

31. $\int \frac{\sin x}{\sin(3x)} dx =$

A. $\frac{1}{2\sqrt{3}} \log \left| \frac{\sqrt{3} + \sin x}{\sqrt{3} - \sin x} \right| + C$

B. $\frac{1}{2\sqrt{3}} \log \left| \frac{\sqrt{3} + \cos x}{\sqrt{3} - \cos x} \right| + C$

C. $\frac{1}{2\sqrt{3}} \log \left| \frac{\sqrt{3} + \tan x}{\sqrt{3} - \tan x} \right| + C$

D. None of these

Answer: C

Watch Video Solution

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

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

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

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

D. None of these

Answer: B

Watch Video Solution

Objective Questions Ii

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

A. $\frac{1}{3}\sin^{-1}\frac{x}{3}+C$

B. $\frac{2}{3}\sin^{-1}\left(\frac{2x}{3}\right)+C$

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

D. None of these

Answer: C

Watch Video Solution

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

A. $\frac{1}{2}\sin^{-1}\frac{x}{2}+C$

B. $\frac{1}{4}\sin^{-1}\frac{x}{2}+C$

C. $\frac{1}{2}\sin^{-1}\frac{x}{4}+C$

D. None of these

Answer: A

Watch Video Solution

3. $\int \frac{\cos x}{\sqrt{4-\sin^2 x}} = ?$

A. $\sin^{-1}\frac{x}{2}+C$

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

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

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

Answer: D

Watch Video Solution

4. $\int\frac{2^x}{\sqrt{1-4^x}}dx=k\sin^{-1}2^x+c$, then k =

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

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

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

D. None of these

Answer: B

Watch Video Solution

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

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

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

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

D. None of these

Answer: C

Watch Video Solution

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

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

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

C. $\frac{1}{\sqrt{2}}\sin^{-1}(4x+1)+C$

D. $\frac{1}{\sqrt{2}}\sin^{-1}(4x-1)+C$

Answer: D

Watch Video Solution

7. $\int \frac{3x^2}{\sqrt{9-16x^6}}dx$

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

B. $\frac{1}{4}\sin^{-1}\left(\frac{4x^3}{3}\right)+C$

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

D. None of these

Answer: B

Watch Video Solution

8. $\int \frac{dx}{\sqrt{2+2x-x^2}} = ?$

A. $\sin^{-1}\left(\frac{x-1}{\sqrt{3}}\right) + C$

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

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

D. None of these

Answer: A

Watch Video Solution

9. Evaluate: $\int \frac{1}{\sqrt{16-6x-x^2}}\,dx$

A. $\sin^{-1}\left(\frac{x-3}{5}\right)+C$

B. $\sin^{-1}\left(\frac{x+3}{5}\right)+C$

C. $\frac{1}{5}\sin^{-1}(x+3)+C$

D. None of these

Answer: B

Watch Video Solution

10. $\int \frac{dx}{\sqrt{x-x^2}}$ is equal to

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

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

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

D. None of these

Answer: C

Watch Video Solution

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

A. $\frac{1}{\sqrt{3}}\sin^{-1}\left(\frac{3x-1}{2}\right)+C$

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

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

D. None of these

Answer: A

Watch Video Solution

12. $\int \frac{dx}{\sqrt{x^2-16}} = ?$

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

B. $\log\left|x + \sqrt{x^2 - 16}\right| + C$

C. $\log\left|x - \sqrt{x^2 - 16}\right| + C$

D. None of these

Answer: B

Watch Video Solution

13. $\int \frac{dx}{\sqrt{4x^2 - 9}}$

A. $\frac{1}{2}\log\left|2x + \sqrt{4x^2 - 9}\right| + C$

B. $\frac{1}{4}\log\left|2x + \sqrt{4x^2 - 9}\right| + C$

C. $\log\left|2x + \sqrt{4x^2 - 9}\right| + C$

D. None of these

Answer: A

Watch Video Solution

14. $\int \frac{x^2}{\sqrt{x^6 - 1}} dx = ?$

A. $\frac{1}{2}\log\left|x^3 + \sqrt{x^6 - 1}\right| + C$

B. $\frac{1}{3}\log\left|x^3 + \sqrt{x^6 - 1}\right| + C$

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

D. None of these

Answer: B

Watch Video Solution

15. Evaluate: $\int \frac{\sin x}{\sqrt{4\cos^2 x - 1}} dx$

A. $-\frac{1}{2}\log\left|2\cos x+\sqrt{4\cos^2 x-1}\right|+C$

B. $-\frac{1}{3}\log\left|2\cos x+\sqrt{4\cos^2 x-1}\right|+C$

C. $-\frac{1}{6}\log\left|\cos x+\sqrt{2\cos^2 x-1}\right|+C$

D. None of these

Answer: A

Watch Video Solution

16. Evaluate : (i) $\int\frac{\sin x}{\sqrt{4\cos^2 x-1}}dx$

(ii) $\int\frac{\sec^2 x}{\sqrt{\tan^2 x-4}}dx$

A. $\log\left|\tan x-\sqrt{\tan^2 x-4}\right|+C$

B. $\log\left|\tan x+\sqrt{\tan^2 x-4}\right|+C$

C. $\frac{1}{2}\log\left|\tan x+\sqrt{\tan^2 x-4}\right|+C$

D. None of these

Answer: B

Watch Video Solution

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

A. $\log\left|e^x + \sqrt{e^{2x}-1}\right| + C$

B. $\log\left|e^{-x} + \sqrt{e^{-2x}-1}\right| + C$

C. $-\log\left|e^{-x} + \sqrt{e^{-2x}-1}\right| + C$

D. None of these

Answer: C

Watch Video Solution

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

A. $\log\left|\left(x-\frac{3}{2}\right)+\sqrt{x^2-3x+2}\right|+C$

B. $\log\left|+\sqrt{x^2-3x+2}\right|+C$

C. $\log\left|x+\sqrt{x^2-3x+2}\right|+C$

D. None of these

Answer: A

Watch Video Solution

19. Evaluate: $\int\frac{\cos x}{\sqrt{\sin^2 x-2\sin x-3}}dx$

A. $\log\left|\sin x+\sqrt{\sin^2 x-2\sin x-3}\right|+C$

B. $\log\left|(\sin x-1)+\sqrt{\sin^2 x-2\sin x-3}\right|+C$

C. $\log\left|(\sin x-1)-\sqrt{\sin^2 x-2\sin x-3}\right|+C$

D. None of these

Answer: B

Watch Video Solution

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

A. $\log\left|(x-2)+\sqrt{x^2-4x+2}\right|+C$

B. $\log\left|x+\sqrt{x^2-4x+2}\right|+C$

C. $\log\left|x-\sqrt{x^2-4x+2}\right|+C$

D. None of these

Answer: A

Watch Video Solution

21. $\int \frac{dx}{\sqrt{x^2+6x+5}} = ?$

A. $\log\left|x+\sqrt{x^2+6x+5}\right|+C$

B. $\log\left|x-\sqrt{x^2+6x+5}\right|+C$

C. $\log\left|(x-3)+\sqrt{x^2+6x+5}\right|+C$

D. None of these

Answer: C

Watch Video Solution

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

A. $\log\left|(x-3)+\sqrt{x^2-6x+8}\right|+C$

B. $\log\left|x+\sqrt{x^2-6x+8}\right|+C$

C. $\log\left|(x-3)-\sqrt{x^2-6x+8}\right|+C$

D. None of these

Answer: A

Watch Video Solution

23. $\int \frac{dx}{\sqrt{x^2 - 6x + 10}}$

A. $\log\left|x + \sqrt{x^2 - 6x + 10}\right| + C$

B. $\log\left|(x - 3) + \sqrt{x^2 - 6x + 10}\right| + C$

C. $\log\left|x - \sqrt{x^2 - 6x + 10}\right| + C$

D. None of these

Answer: B

Watch Video Solution

24. $\int \frac{x^2}{\sqrt{x^6 - a^6}} dx$

A. $\frac{1}{3}\log\left|x^6 + a^6\right| + C$

B. $\frac{1}{3}\tan^{-1}\left(\frac{x^3}{a^3}\right) + C$

C. $\frac{1}{3}\log\left|x^3 + \sqrt{x^6 + a^6}\right| + C$

D. None of these

Answer: C

Watch Video Solution

25. Examples: $\int \frac{\sec^2 x}{\sqrt{16 + \tan^2 x}} dx$

A. $\log\left|\tan x + \sqrt{\tan^2 x + 16}\right| + C$

B. $\log\left|x + \sqrt{\tan^2 x + 16}\right| + C$

C. $\log\left|\tan x - \sqrt{\tan^2 x + 16}\right| + C$

D. None of these

Answer: A

Watch Video Solution

26. Evaluate $\int \frac{dx}{\sqrt{3x^2+6x+12}} dx.$

A. $\log\left|(x+1)+\sqrt{x^2+2x+4}\right|+C$

B. $\frac{1}{3}\log\left|(x+1)+\sqrt{x^2+2x+4}\right|+C$

C. $\frac{1}{\sqrt{3}}\log\left|(x+1)+\sqrt{x^2+2x+4}\right|+C$

D. None of these

Answer: C

Watch Video Solution

27. $\int \frac{dx}{\sqrt{2x^2+4x+6}}$

A. $\frac{1}{2}\log\left|(x+1)+\sqrt{x^2+2x+3}\right|+C$

B. $\frac{1}{\sqrt{2}}\log\left|(x+1)+\sqrt{x^2+2x+3}\right|+C$

C. $\frac{1}{\sqrt{2}}\log\left|x+\sqrt{x^2+2x+3}\right|+C$

D. None of these

Answer: B

Watch Video Solution

28. $\int\frac{x^2}{\sqrt{x^2+2x^3+3}}dx = ?$

A. $\frac{1}{3}\log\left|\left(x^3+1\right)+\sqrt{x^6+2x^3+3}\right|+C$

B. $\log\left|x^3+\sqrt{x^6+2x^3+3}\right|+C$

C. $\frac{1}{3}\log\left|\left(x^3+1\right)-\sqrt{x^6+2x^3+3}\right|+C$

D. None of these

Answer: A

Watch Video Solution

29. Write a value of $\int \sqrt{4-x^2}\,dx$

A. $\frac{x}{2}\sqrt{4-x^2}+2\sin^{-1}\frac{x}{2}+C$

B. $x\sqrt{4-x^2}+\sin^{-1}\frac{x}{2}+C$

C. $\frac{1}{2}x\sqrt{4-x^2}-2\sin^{-1}\frac{x}{2}+C$

D. None of these

Answer: A

Watch Video Solution

30. $\int \sqrt{1-9x^2}dx = ?$

A. $\frac{x}{2}\sqrt{1-9x^2}+\frac{1}{18}\sin^{-1}3x+C$

B. $\frac{3x}{2}\sqrt{1-9x^2}+\frac{1}{6}\sin^{-1}3x+C$

C. $\frac{x}{2}\sqrt{1-9x^2}+\frac{1}{6}\sin^{-1}3x+C$

D. None of these

Answer: C

Watch Video Solution

31. $\int\sqrt{9-4x^2}dx = ?$

A. $\frac{x}{2}\sqrt{9-4x^2}+\frac{9}{4}\sin^{-1}\frac{2x}{3}+C$

B. $x\sqrt{9-4x^2}+\frac{9}{4}\sin^{-1}\frac{2x}{3}+C$

C. $\frac{x}{2}\sqrt{9-4x^2}-\frac{9}{4}\sin^{-1}\frac{2x}{3}+C$

D. None of these

Answer: A

Watch Video Solution

32. $\int \cos x \sqrt{9 - \sin^2 x} + dx = ?$

A. $\frac{1}{2}\sin x \sqrt{9 - \sin^2 x} + \frac{9}{2}\sin^{-1}\left(\frac{\sin x}{3}\right) + C$

B. $\frac{\sin x}{2}\sqrt{9 - \sin^2 x} + \frac{9}{2}\sin^{-1}\left(\frac{\sin x}{3}\right) + C$

C. $\frac{1}{2}\cos x \sqrt{9 - \sin^2 x} + \frac{9}{2}\sin^{-1}\left(\frac{\sin x}{3}\right) + C$

D. None of these

Answer: A

Watch Video Solution

33. $\int \sqrt{x^2 - 16} dx = ?$

A. $x\sqrt{x^2-16}-4\log\left|x+\sqrt{x^2-16}\right|+C$

B. $\frac{x}{2}\sqrt{x^2-16}-8\log\left|x+\sqrt{x^2-16}\right|+C$

C. $\frac{x}{2}\sqrt{x^2-16}+8\log\left|x+\sqrt{x^2-16}\right|+C$

D. None of these

Answer: B

Watch Video Solution

34. $\int\sqrt{x^2-4x+2}dx=\ ?$

A.

$$\frac{1}{2}(x-2)\sqrt{x^2-4x+2}+\log\left|(x-2)+\sqrt{x^2-4x+2}\right|+C$$

B.

$$(x-2)\sqrt{x^2-4x+2}+\frac{1}{2}\log\left|(x-2)+\sqrt{x^2-4x+2}\right|+C$$

C.

$$\frac{1}{2}(x-2)\sqrt{x^2-4x+2}-\log\left|(x-2)+\sqrt{x^2-4x+2}\right|+C$$

D. None of these

Answer: C

Watch Video Solution

35. $\int\sqrt{9x^2+16}dx = ?$

A. $\frac{x}{2}\sqrt{9x^2+16}+\frac{8}{3}\log\left|3x+\sqrt{9x^2+16}\right|+C$

B. $\frac{x}{2}\sqrt{9x^2+16}-\frac{8}{3}\log\left|3x+\sqrt{9x^2+16}\right|+C$

C. $x\sqrt{9x^2+16}+24\log\left|3x+\sqrt{9x^2+16}\right|+C$

D. None of these

Answer: A

Watch Video Solution

36. $\int e^x \sqrt{e^{2x}+4}dx = ?$

A. $\frac{1}{2}e^x\sqrt{e^{2x}+4} - 2\log\left|e^x + \sqrt{e^{2x}+4}\right| + C$

B. $\frac{1}{2}e^x\sqrt{e^{2x}+4} + 2\log\left|e^x + \sqrt{e^{2x}+4}\right| + C$

C. $e^x\sqrt{e^{2x}+4} + \frac{1}{2}\log\left|e^x + \sqrt{e^{2x}+4}\right| + C$

D. None of these

Answer: B

Watch Video Solution

37. $\int \frac{\sqrt{16+(\log x)^2}}{x}dx = ?$

A.

$$\frac{1}{2}\log x.\sqrt{16+(\log x)^2}+8\log\left|\log x+\sqrt{16+(\log x)^2}\right|+C$$

B.

$$\frac{1}{2}\log x.\sqrt{16+(\log x)^2}+4\log\left|\log x+\sqrt{16+(\log x)^2}\right|+C$$

C.

$$\frac{1}{2}\log x.\sqrt{16+(\log x)^2}+16\log\left|\log x+\sqrt{16+(\log x)^2}\right|+C$$

D. None of these

Answer: A

Watch Video Solution