INDEFINITE INTEGRALS-V

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

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

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) none of these

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

(a) $\sin^{-1}(2^x)\ \log\ 2 + C$ (b) $\frac{\sin^{-1}(2^x)}{\log 2}+C$ (c) $\sin^{-1}(2^x)+C$ (d) none of these

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

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

(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) $\frac{1}{\sqrt{2}}\sin^{-1}(4x-1)+C$ 10. $\int \frac{dx}{\sqrt{x-x^2}} = ?$

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

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

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

(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

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

(a) $\sin^{-1}(x-1)+C$ (b) $\sin^{-1}(x+1)+C$ (c) $\sin^{-1}(2x-1)+C$ (d) none of these

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

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

(d) none of these

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

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

(a) $\frac{1}{2}\log\left|2x+\sqrt{4x^2-9}\right|+C$ (b) $\frac{1}{4}\log\left|x+\sqrt{4x^2-9}\right|+C$

(c) $\log\left|2x+\sqrt{4x^2-9}\right|+C$ (d) none of these

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

15. $\int \frac{\sin x}{\sqrt{4\cos^2 x-1}} = ?$

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

(c) $-\frac{1}{6}\log\left|\cos x+\sqrt{2\cos^2 x-1}\right|+C$ (d) none of these

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

(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

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

(a) $\log\left|e^x+\sqrt{e^{2x}-1}\right|+C$ (b) $\log\left|e^{-1}+\sqrt{e^{-2x}-1}\right|+C$

(c) $-\log\left|e^{-x}+\sqrt{e^{-2x}-1}\right|+C$ (d) none of these

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

(c) $\log\left|x-\sqrt{x^2-3x+2}\right|+C$ (d) none of these

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

(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

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

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

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

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

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

(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

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

(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

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

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

(c) $\frac{1}{\sqrt{3}}\log\left|(x+1)+\sqrt{x^2+2x+4}\right|+C$ (d) none of these

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

28. $\int\frac{x^2}{\sqrt{x^6+2x^3+3}}dx=?$

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

(c) $\frac{1}{3}\log\left|(x^3+1)-\sqrt{x^6}\right|+2x^3+3+C$ (d) none of these

29. $\int\sqrt{4-x^2}\,dx=?$

(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

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

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

(c) $\frac{x}{2}\sqrt{9-4x^2}-\frac{9}{4}\sin^{-1}\frac{2x}{3}+C$ (d) none of these

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

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

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

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

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.

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) $\log x.\sqrt{16+(\log x)^2}+16\log\left|\log x+\sqrt{16+(\log x)^2}\right|+C$ (d) none of these

ANSWERS : INDEFINITE INTEGRALS-V

1. (c) 2. (a) 3.(d) 4.(b) 5. (c) 6. (d) 7. (b) 8. (a) 9. (b) 10. (c)
11. (a) 12.(b) 13.(a) 14.(b) 15.(a) 16.(b) 17.(c) 18.(a) 19.(b) 20. (a)
21. (c) 22.(a) 23.(b) 24.(c) 25.(a) 26.(c) 27.(b) 28.(a) 29.(a) 30.(c)
31. (a) 32.(a) 33.(b) 34.(c) 35.(a) 36.(b) 37.(a)

DEFINITE INTEGRAL-I

1. $\int_1^4 x\sqrt{x}dx = ?$

(a) 12.8 (b) 12.4 (c) 7 (d) none of these

2. $\int_0^2 \sqrt{6x+4}dx = ?$

(a) $\frac{64}{9}$ (b) 7 (c) $\frac{56}{9}$ (d) $\frac{60}{9}$

3. $\int_0^1 \frac{dx}{\sqrt{5x+3}} = ?$

(a) $\frac{2}{5}(\sqrt{8}-\sqrt{3})$ (b) $\frac{2}{5}(\sqrt{8}+\sqrt{3})$ (c) $\frac{2}{5}\sqrt{8}$ (d) none of these

4. $\int_0^1 \frac{1}{(1+x^2)}dx = ?$

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{4}$ (d) none of these

5. $\int_0^2 \frac{dx}{\sqrt{4-x^2}} = ?$

(a) 1 (b) $\sin^{-1}\frac{1}{2}$ (c) $\frac{\pi}{4}$ (d) none of these

6. $\int_{\sqrt{3}}^{\sqrt{8}} x\sqrt{1+x^2}dx = ?$

(a) $\frac{19}{3}$ (b) $\frac{19}{6}$ (c) $\frac{38}{3}$ (d) $\frac{9}{4}$

7. $\int_0^1 \frac{x^3}{(1+x^8)}dx = ?$

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{4}$ (c) $\frac{\pi}{8}$ (d) $\frac{\pi}{16}$

8. $\int_1^e \frac{(\log x)^2}{x}dx = ?$

(a) $\frac{1}{3}$ (b) $\frac{1}{3}e^3$ (c) $\frac{1}{3}(e^3-1)$ (d) none of these

9. $\int_{\pi/4}^{\pi/2} \cot x dx = ?$

(a) log 2 (b) 2 log 2 (c) $\frac{1}{2}\log 2$ (d) none of these

10. $\int_0^{\pi/4} \tan^2 x dx = ?$

(a) $\left(1-\frac{\pi}{4}\right)$ (b) $\left(1+\frac{\pi}{4}\right)$ (c) $\left(1-\frac{\pi}{2}\right)$ (d) $\left(1+\frac{\pi}{2}\right)$

11. $\int_0^{\pi/2} \cos^2 x dx = ?$

(a) $\frac{\pi}{2}$ (b) π (c) $\frac{\pi}{4}$ (d) 1

12. $\int_{\pi/3}^{\pi/2} \cos ecx dx = ?$

(a) $\frac{1}{2}\log 2$ (b) $\frac{1}{2}\log 3$ (c) -log 2 (d) none of these