# BHASKAR CLASSES PVT LTD

## Indefinite Integration

1. Evaluate $\int \frac{e^{5\log_e x} - e^{4\log_e x}}{e^{3\log_e x} - e^{2\log_e x}} \, dx$

2. Evaluate:

   a. $\int \frac{2}{1+\cos 2x} \, dx$

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

3. Evaluate:

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

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

4. Evaluate:

   a. $\int \sqrt{\frac{1+\cos 2x}{2}} \, dx$

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

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

6. Evaluate $\int \frac{1}{a^x b^x} \, dx$

7. Evaluate:

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

   b. $\int \frac{2\cos^2 x - \cos 2x}{\cos^2 x} \, dx$

8. Evaluate $\int \frac{e^{\log \sqrt{x}}}{x} \, dx$

9. Evaluate $\int \frac{\cos x - \cos 2x}{1 - \cos x} \, dx$

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

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

12. Evaluate $\int e^{x \log a} + e^{a \log x} + e^{a \log a} \, dx$

13. Evaluate the following integrals $\int \frac{x^3 - 3x^2 + 5x - 7 + x^2 a^x}{2x^2} \, dx$

14. Evaluate the following integrals $\int \frac{\sin^3 x - \cos^3 x}{\sin^2 x \cos^2 x} dx$

15. Evaluate $\int \sin(ax + b) \cos(ax + b) dx$

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

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

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

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

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

21. $\int \frac{2x+1}{\sqrt{3x+2}} dx$

22. $\int (5x + 3)\sqrt{2x - 1} \, dx$

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

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

25. Evaluate $\int \sin^4 x \, dx$

26. Evaluate $\int \cos^4 x \, dx$

27. $\int \sin^2(2x + 5) \, dx$

28. $\int \sin^3(2x + 1) \, dx$

29. $\int \cos^4 2x \, dx$

30. $\int \sin 3x \, \cos 4x \, dx$

31. $\int \cos 2x \, \cos 4x \, dx$

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

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

34. Evaluate:

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

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

35. Evaluate the following integrals:

    a.  $\int \frac{2 \cos x - 3 \sin x}{6 \cos x + 4 \sin x} dx$

    b.  $\int \frac{10x^9 + 10^x \log_e 10}{10^x + x^{10}} dx$