

Evaluate each of the following Integrals

I. Very Short Answer Type Questions

1. $\int (\tan^2 3x) dx$
2. $\int (\sin^2 3x) dx$
3. $\int (\cos^2 5x) dx$
4. $\int [\tan^2 (5x + 3)] dx$
5. $\int \left[\frac{(\cos 2x)}{\sin^2 x \cos^2 x} \right] dx$
6. $\int \frac{dx}{(\sin^2 x \cos^2 x)}$
7. $\int \frac{\tan x dx}{\sec x + \tan x}$
8. $\int \frac{dx}{1 + \cos 2x}$
9. $\int \left(\frac{\sin^2 x - \cos^2 x}{\sin x \cos x} \right) dx$
10. $\int \left(\frac{\sin 2x}{\sin^3 x} \right) dx$
11. $\int \left(\frac{\sin 2x}{\cos^3 x} \right) dx$
12. $\int \left(\frac{\sin 2x}{\sin 4x} \right) dx$
13. $\int \left(\frac{\cos 2x}{\cos x} \right) dx$
14. $\int \left(\frac{\cos 2x}{\sin x} \right) dx$
15. $\int \left(\frac{\cos 2x}{\cos^2 x} \right) dx$
16. $\int \left(\frac{\cos 2x}{\sin^2 x} \right) dx$
17. $\int \left(\frac{\cos 2x}{\sin 4x} \right) dx$
18. $\int \left(\frac{\sin^2 x}{\cos x} \right) dx$
19. $\int \left(\frac{\sin^2 x}{\sin 2x} \right) dx$
20. $\int \left(\frac{\cos^2 x}{\sin x} \right) dx$
21. $\int \left(\frac{\cos^2 x}{\sin 2x} \right) dx$

II. Short Answer Type Questions

22. $\int (\sin^2 x \cos^2 x) dx$
23. $\int (\sin^3 x \cos^3 x) dx$
24. $\int \sqrt{\frac{1 + \sin x}{1 - \sin x}} dx$
25. $\int \sqrt{1 + \cos 2x} dx$

$$26. \int \sqrt{1 + \sin 2x} \, dx$$

$$28. \int \left(\frac{\cos 2x - \cos 2\alpha}{\cos x + \cos \alpha} \right) dx$$

$$30. \int \left[\frac{\cos 2x - \cos 2\alpha}{\sin (x + \alpha)} \right] dx$$

$$32. \int \frac{\cos 2x + \cos 2\alpha}{\cos x - \sin \alpha} dx$$

$$34. \int [\sin 3x \cos 2x] \, dx$$

$$36. \int \left(\frac{\cos 4x}{\cos 2x} \right) dx$$

$$38. \int \left(\frac{\sin 3x}{\sin x} \right) dx$$

$$27. \int \sqrt{1 + 2 \tan x (\sec x + \tan x)} \, dx$$

$$29. \int \left(\frac{\cos 2x - \cos 2\alpha}{\sin x + \sin \alpha} \right) dx$$

$$31. \int \left[\frac{\cos 2x + \cos 2\alpha}{\cos (x - \alpha)} \right] dx$$

$$33. \int \frac{\cos 2x + \cos 2\alpha}{\sin x + \cos \alpha} dx$$

$$35. \int [\sin 7x \sqrt{1 - \cos 4x}] \, dx$$

$$37. \int \left(\frac{\cos 3x}{\cos^2 x} \right) dx$$

$$39. \int \left(\frac{\cos 3x}{\cos^3 x} \right) dx$$