

Evaluate each of the following integrals:

1. $\int \frac{1}{\sec x - \tan x} dx$

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

3. $\int_1^e \frac{\ln x \sin(\ln x)}{x} dx$

4. $\int x \sin x^2 \cos x^2 dx$

5. $\int \frac{\ln(\sin x)}{\tan x} dx$

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

7. $\int (x-5)^3 2^x dx$

8. $\int \frac{\sin^2 \sqrt{\theta} \cos^4 \sqrt{\theta}}{\sqrt{\theta}} d\theta$

9. $\int \frac{11x+23}{(2x-5)(x^2+4x+9)} dx$

10. $\int x^4 \sqrt{5-4x^2} dx$

11. $\int_0^1 \frac{1}{\sqrt{2x+3-x}} dx$

12. $\int \frac{2x^5 - 3x^4 + 3x^3 + 10x^2 - 17x - 22}{2x^4 + x^3 - 2x^2 + 2x - 12} dx$

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

14. $\int \cot x \cdot \ln^3(\sin^2 x) dx$

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

16. $\int \frac{x^2+1}{x^4-4x^3+6x^2-8x+8} dx$

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

18. $\int x^3 \tanh^{-1} x dx$

19. $\int \ln(1-\sqrt{x+2}) dx$

20. $\int \frac{x^5-4x^4+6x^3-6x^2+11x-1}{x^4-4x^3+6x^2-8x+8} dx$ _____