

SHOW WORK

1. Evaluate the following integral $\int \frac{x^2 + x - 16}{(x+1)(x-3)^2} dx$

2. Evaluate the following integral $\int \frac{x^2}{\sqrt{9-x^2}} dx$

3. Evaluate the following integral $\int e^{-2x} \tan(e^{-2x}) dx$

4. Evaluate the following integral $\int \sin(x) \cos(2x) dx$

5. Evaluate the following integral $\int \sin^{-1}(x) dx$

6. Evaluate the following integral $\int \frac{dx}{x^2 - 4x + 13}$

7. Derive the reduction formula for $\int \cot^n(x) dx$

8. Evaluate the following integral $\int \frac{x^3}{x^2 - 3x + 2} dx$

9. Evaluate the following integral $\int x^2 e^x dx$

10. Evaluate the following integral $\int e^x \sqrt{1 - e^{2x}} dx$

11. Evaluate the following integral $\int \cot^3(x) \csc^3(x) dx$

12. Evaluate the following integral $\int \frac{\sin(x)}{\cos^8(x)} dx$

13. Evaluate the following integral $\int \frac{dx}{\sqrt{x^2 - 6x + 10}}$

14. Evaluate the following integral $\int \sqrt{x} \ln(x) dx$

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