

Integration Rules Mixed Practice

Evaluate the indefinite and definite integrals using a u-substitution or integration by parts.

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

2. $\int_{\frac{\pi}{2}}^{\pi} \sin^2 x \cos x dx$

3. $\int x(1 - 3x^2)^4 dx$

4. $\int_0^1 x e^{-x^2} dx$

5. $\int \frac{x + 3}{x^2 + 6x - 5} dx$

6. $\int (x^2 - 1)e^x dx$

7. $\int x^2 \sqrt{x^3 + 3} dx$

8. $\int x^2 \sin 2x dx$

9. $\int x^4 e^{-x} dx$

10. $\int_0^1 2x e^{2x} dx$

11. $\int x \sin(3x^2) dx$

12. $\int x^3 e^x dx$

13. $\int \frac{\sin x}{\sqrt{1 - \cos x}} dx$

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

15. $\int \frac{\cos x}{\sqrt{\sin(x)}} dx$

16. $\int x \ln(3x) dx$

$$17. \int_0^1 x^2 e^x dx$$

$$18. \int (x^2 - 1)e^x dx$$

$$19. \int_1^e 2x \ln x dx$$

$$20. \int x \cos x dx$$

$$21. \int \cot^4 x \csc^2 x dx$$

$$22. \int x e^{x^2} dx$$

$$23. \int_3^6 \frac{x}{3\sqrt{x^2 - 8}} dx$$

$$24. \int_0^3 \frac{1}{\sqrt{1+x}} dx$$