

Section 1-8 : Improper Integrals

Determine if each of the following integrals converge or diverge. If the integral converges determine its value.

1. $\int_4^{\infty} 2 - 4x + 6x^2 dx$

2. $\int_0^5 \frac{1}{4w - 20} dw$

3. $\int_{-1}^2 \frac{3}{\sqrt[6]{4 - 2z}} dz$

4. $\int_{-\infty}^0 x e^{2+3x} dx$

5. $\int_0^{\infty} x e^{2+3x} dx$

6. $\int_2^{\infty} \frac{1}{x^2 + 1} dx$

7. $\int_0^3 \frac{1}{z^2 - 4z} dz$

8. $\int_{-\infty}^1 \frac{x}{x^2 + 1} dx$

9. $\int_{-1}^2 \frac{1}{y^2 - 2y - 3} dy$

10. $\int_{-\infty}^0 \cos(w) dw$

11. $\int_{10}^{\infty} \frac{1}{(5 - 2z)^2} dz$

12. $\int_{-\infty}^{\infty} \frac{z^3}{z^4 + 1} dz$

$$13. \int_1^4 \frac{1}{2y-6} dy$$

$$14. \int_1^5 \frac{1}{\sqrt[3]{w-2}} dw$$

$$15. \int_{-2}^1 \frac{e^x}{x^2} dx$$

$$16. \int_{-\infty}^{\infty} x^2 e^{x^3} dx$$

$$17. \int_{-\infty}^{\infty} \frac{y}{(y^2+1)^3} dy$$

$$18. \int_0^3 \frac{w^3}{\sqrt{9-w^2}} dw$$

$$19. \int_{-3}^1 \frac{1}{w^2+2w} dw$$

$$20. \int_0^{\infty} \frac{e^x}{x^2} dx$$

$$21. \int_0^{\infty} \frac{1}{z[\ln(z)]^2} dz$$

$$22. \int_0^{\infty} \frac{1}{w-1} dw$$

