



**P-Test for Improper Integrals:**

Determine if the following integrals converge or diverge.

1. 
$$\int_1^4 \frac{2}{\sqrt[3]{x-2}} dx$$

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

3. 
$$\int_3^{\infty} \frac{x^2}{x^4 + 4} dx$$

4. 
$$\int_{-1}^1 \frac{1}{x^2} dx$$

5. 
$$\int_0^1 \ln(x) dx$$

6. 
$$\int_0^{\infty} \frac{1}{(x-2)^2} dx$$

7. **Challenge:** For what values of  $p$  does  $\int_{-1}^1 \frac{1}{x^p} dx$  converge?