

MATH 130A Review: Integration over an infinite interval

Facts to Know

Integration over an infinite interval

$$\int_a^\infty f(x) dx = \quad \quad \text{and} \quad \int_{-\infty}^b f(x) dx =$$

Examples

1. Show that $\int_1^\infty \frac{1}{x} dx$ diverges

2. Calculate $\int_0^{\infty} -xe^{-x} dx$

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