

M1B/Schoenbrun Section 7.8 Improper Integrals 1

Evaluate the improper integrals that converge.

$$1) \int_0^{\infty} \frac{1}{1+x^2} dx$$

$$2) \int_0^{\infty} \frac{\log x}{x^2} dx$$

$$3) \int_e^{\infty} \frac{1}{x \log x} dx$$

$$4) \int_0^1 \frac{dx}{\sqrt{x}}$$

$$5) \int_0^2 \frac{x}{\sqrt{1-x^2}} dx$$

$$6) \int_0^{\infty} \frac{dx}{x(\ln x)^2}$$

$$7) \int_0^1 x \ln x dx$$

$$8) \int_0^5 \frac{x}{\sqrt{x^2 - 9}}$$

$$9) \int_0^1 x \ln x \, dx$$

$$10) \int_0^5 \frac{x}{\sqrt{x^2 - 9}}$$