Section 7.8: Trigonometric Integrals

TYPE 1 Improper Integrals are of the form

$$\int_a^{\infty} f(x)\,\mathrm{dx}, \quad \int_{-\infty}^{b} f(x)\,\mathrm{dx}, \quad \text{or} \quad \int_{-\infty}^{\infty} f(x)\,\mathrm{dx}$$

Problem 1. Determine whether the integral is convergent or divergent. Evaluate the integrals thst are convergent.

(a) $\displaystyle\int_{-\infty}^{0} \frac{x}{(x^2+1)^3}\,\mathrm{dx}$, (b) $\displaystyle\int_0^{\infty} \sin(\theta)e^{\cos(\theta)}\,\mathrm{d}\theta$, (c) $\displaystyle\int_1^{\infty} \frac{\ln(x)}{x^2}\,\mathrm{dx}$, (d) $\displaystyle\int_{-\infty}^{\infty} xe^{-x^2}\,\mathrm{dx}$