

**Exercise 3**

Use residues to evaluate the improper integrals in Exercises 1 through 8.

$$\int_0^{\infty} \frac{\cos ax}{(x^2 + b^2)^2} dx \quad (a > 0, b > 0).$$

$$\text{Ans. } \frac{\pi}{4b^3} (1 + ab)e^{-ab}.$$