

**Problems - Sections 60, 61, 62**

(1) Find the Laurent series that represents the function in the domain  $0 < |z| < \infty$ .

$$f(z) = z^2 \sin\left(\frac{1}{z^2}\right)$$

(3) Find the Laurent series that represents the function in the domain  $1 < |z| < \infty$ .

$$f(z) = \frac{1}{1+z}$$

(4) Find two Laurent series that represent the function: one for  $0 < |z| < 1$  and one for  $1 < |z| < \infty$ .

$$f(z) = \frac{1}{z^2(1-z)}$$

(5) Find two series that represent the function: the Maclaurin series for  $|z| < 1$  and the Laurent series for  $1 < |z| < \infty$ .

$$f(z) = \frac{z+1}{z-1}$$