

1. Let  $f(x) = x^2 - 3x - 10$ .

(a) Find the difference quotient of  $f$ .

(b) Find all  $x$  that satisfy  $f(x) = 8$ .

(c) Find all  $x$  that satisfy  $f(x) > 0$ . Write your answer in interval notation.

(d) Find the domain of the function  $g(x) = \sqrt{x^2 - 3x - 10}$ .

2. Find all  $x$  that satisfy  $\frac{3}{x} \geq \frac{2}{x+1}$ .

3. Let  $g(x) = \frac{x}{x-7}$ .

(a) Evaluate  $g(-1)$ .

(b) Find and simplify  $g(x+7)$ .

(c) Find and simplify  $g\left(\frac{3}{x+2}\right)$ .

(d) Find the domain of the function  $g$ .