

Math 111 LP 4 - Function Algebra

1. Suppose $f(x) = 2x^2 + 1$ and $g(x) = -3x + 2$. Find the following:

a. $(f + g)(2)$

b. $(f \cdot g)(-3)$

2. Suppose $f(x) = \frac{3}{(x+1)(x-2)}$ and $g(x) = \frac{1}{x^2-1}$. Find $\left(\frac{g}{f}\right)(x)$. What are the domains of f , g , and g/f ?

3. Suppose $f(x) = x^2 - 2x - 3$. Find $\frac{f(x+h) - f(x)}{h}$.

4. Suppose that $f(x) = x + 3$ and $g(x) = x^2 - 3$. Find the following:

a. $(f \circ g)(2)$

b. $(f \circ g)(x)$

5. Suppose that $f(x) = \frac{3}{x+3}$ and $g(x) = \frac{1}{3x-2}$. Find $(f \circ g)(x)$ and state its domain.

6. Find functions f and g such that $f \circ g = H$ if $H(x) = 2(3x - 1)^2$. In fact, find multiple solutions to this exercise.