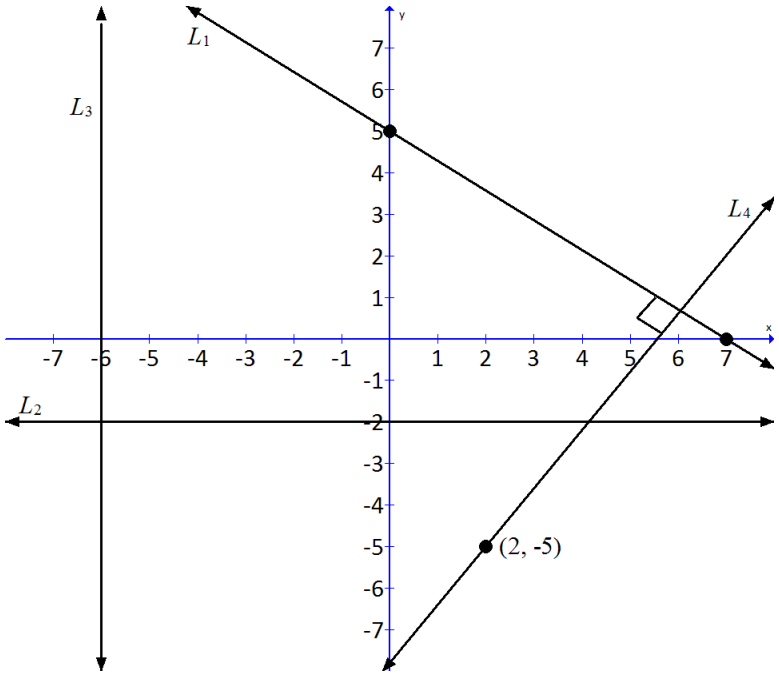
§1.7 LINEAR FUNCTIONS

1. Find the equation of each of the lines graphed below where lines L_1 and L_4 are perpendicular. Clearly label your answers.



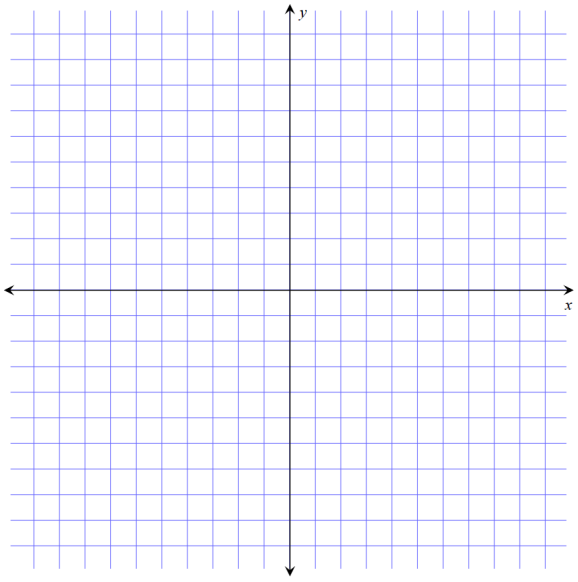
§1.8 Quadratic Functions

2. Find the quadratic function whose vertex is $(3,-8)$ and one of whose x-intercepts is -1. What is the other x-intercept? What is the y-intercept?

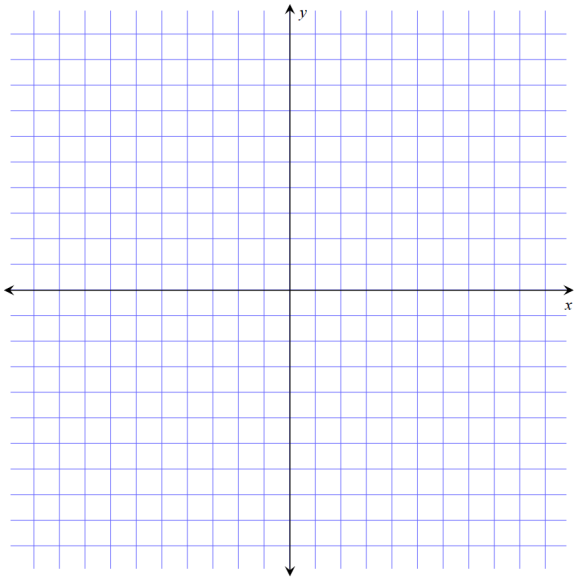
§2.2 Other Functions

3. Using transformations, sketch the graph of each function labeling at least three points on the graph. Also, find the domain and range of the function.

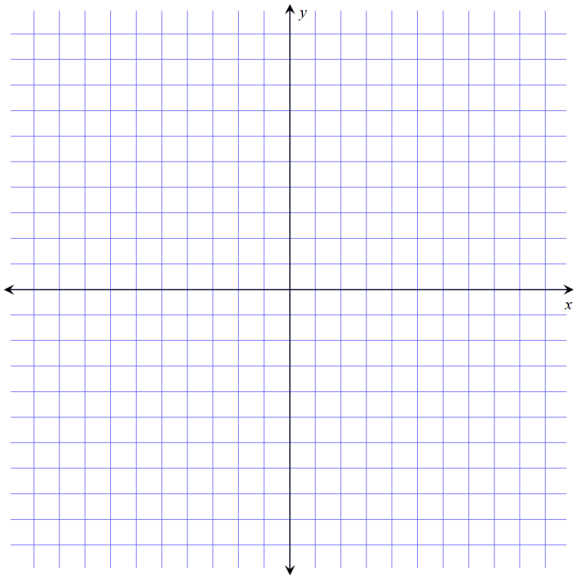
   (a) $f(x) = (x-5)^3 + 4$



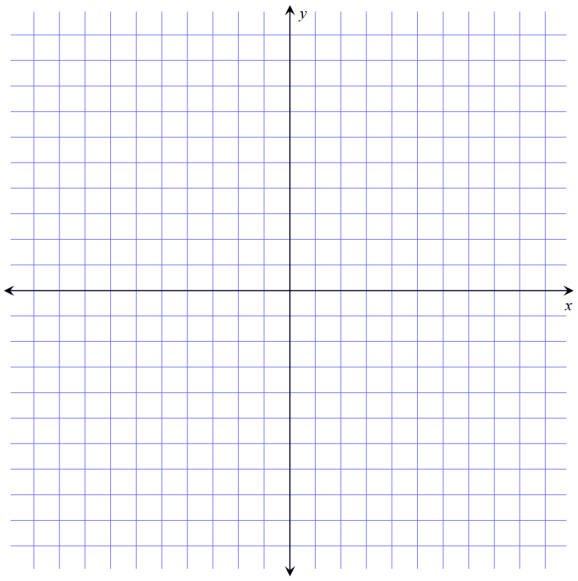
(b) $g(x) = -|x+4|+3$



(c) $y = \sqrt{3-x}-6$



(d) $h(x) = \dfrac{1}{x-5} - 3$



§2.3 Arithmetic Combination of Functions

4. Let $f(x) = \dfrac{x^2-4}{x+3}$ and $g(x) = \dfrac{x-4}{x+3}$.

(a) Find and simplify $f + g$.

(b) Find and simplify $f - g$.

(c) Find and simplify $f \cdot g$.

(c) Find and simplify f/g.

§2.4 Composition of Functions

5. Let $f(x) = \dfrac{x-2}{x+3}$, $g(x) = \dfrac{2}{x+1}$, and $h(x) = 3x^2 - 3x + 1$.

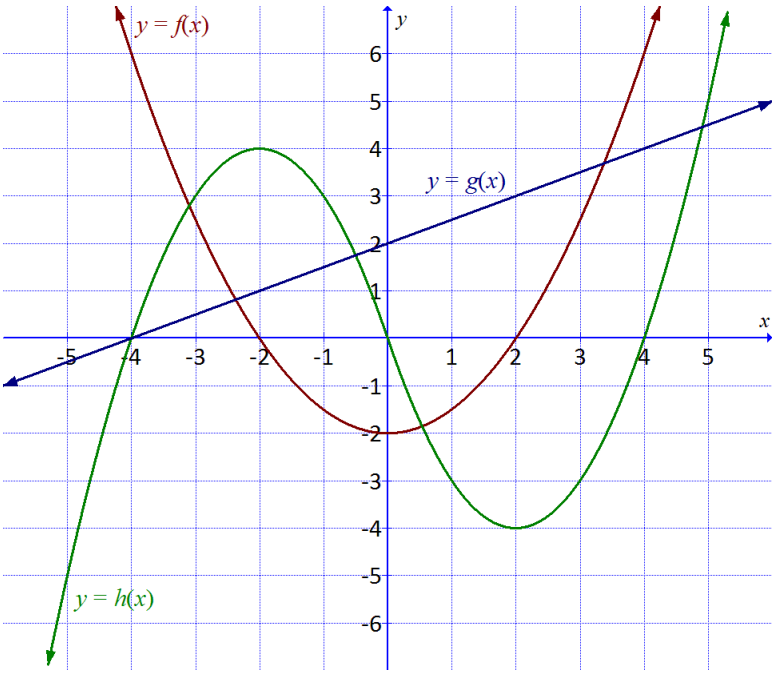
(a) Evaluate $(h \circ f)(-2)$.

(b) Find and simplify $f \circ h$.

(c) Find and simplify $f \circ g$.

6. Using the graphs below, evaluate each of the following.

- $f(4)$
- $g(-4)$
- $h(-3)$
- $f(0)$
- $g(3)$
- $h(0)$
- $(f \circ g)(4)$
- $(g \circ h)(-2)$
- $(h \circ f)(2)$
- $(f \circ f)(0)$
- $(h \circ h)(-3)$
- $(g \circ g)(1)$



§2.5 Inverse Functions

7. If $f(x) = \dfrac{3x-4}{2}$, find $f^{-1}(5)$.

8. If $f(x) = x^5 + x^3 + x$, find $f^{-1}(3)$.

9. Find the inverse function of $f(x) = \dfrac{5}{x-3}$.