

Example 1

Let f be a cubic polynomial function for which

$$f(1) = 6 \text{ and } f(-1) = f(0) = f(2) = 0$$

Determine the value of each of the constants a , b , c , and k for which

$$f(x) = k(x - a)(x - b)(x - c)$$

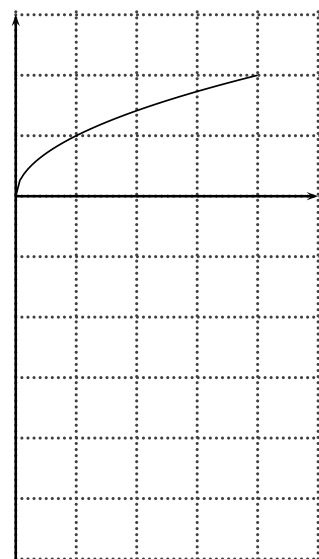
Expand the expression for the function f in expanded form.

Example 2

The graph of $y = \sqrt{x}$ is shown. Use appropriate transformations to sketch the graph of

$$y = 2 - 3\sqrt{x - 1}$$

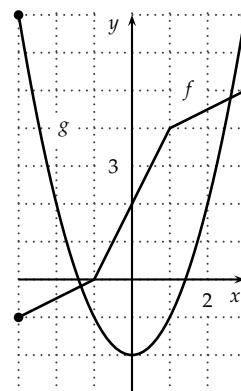
Describe each transformation and be sure to specify the order in which the transformations are applied.



Example 3

The graphs of the two functions f and g are shown.

- (a) Find $g(f(0))$.
- (b) Find $f(g(2))$.
- (c) Find $(f \circ g)(1)$.
- (d) Find $(g \circ f)(-3)$.



Example 4

The graphs of the function $f(x) = \sqrt{c + x^2}$ for $c = -4$, $c = 0$, and $c = 4$ are shown. Label each graph with the correct value of c , and label both sets of axes to specify the viewing rectangle (window) used.

