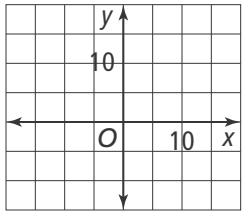
5-6 Additional Practice

Inverse Relations and Functions

1. Identify the inverse relation. Is it a function?

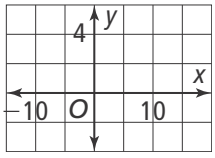
x	4	3	9	2	8	1
y	5	−1	6	3	5	7

2. Let $f(x) = 5x - 1$. Write an equation for f^{-1}. Sketch the graphs of f and f^{-1} on the same coordinate plane. Is f^{-1} a function?



3. Find the inverse of the function $f(x) = x^2 + 10x + 25$. Identify an appropriate restriction of its domain.

4. Sketch the graph of $f(x) = 3 - \sqrt[3]{x + 2}$ and verify that the inverse is a function. Then write an equation for f^{-1}.



5. Use composition to determine whether f and g are inverse functions.

$f(x) = \frac{1}{5}x - 3$, $g(x) = 5x + 15$

6. Describe and correct the error a student made in finding the inverse of the function $f(x) = x^2 - 25$.

$$y = x^2 - 25$$
$$x = y^2 - 25$$
$$\sqrt{x} = \sqrt{y^2 - 25}$$
$$\sqrt{x} = y - 5$$
$$\sqrt{x} + 5 = y$$
$$f^{-1}(x) = \sqrt{x} + 5$$

7. A coffee can is in the shape of a cylinder, with a radius r and height h.

a. Find the formula that gives the radius of the paint can in terms of the volume, V.

b. Describe any restrictions on the formula.

c. What is the radius of a coffee can with volume 46.25π in.^{3} and height is 7.4 in.?