

## 2.8 Inverse Functions

AP Precalculus

Name: \_\_\_\_\_

**CA #2**

**Find the inverse of each function and list the domain and range of  $f^{-1}(x)$ .**

1.  $f(x) = -(x - 10)^2 + 4$  for  $x \geq 10$

Domain of  $f^{-1}(x)$ :

Range of  $f^{-1}(x)$ :

2.  $f(x) = (x + 1)^2 - 7$  for  $x \leq -1$

Domain of  $f^{-1}(x)$ :

Range of  $f^{-1}(x)$ :

3.  $f(x) = \sqrt{x + 3} + 2$

Domain of  $f^{-1}(x)$ :

Range of  $f^{-1}(x)$ :

4.  $f(x) = -\sqrt{x - 6} - 11$

Domain of  $f^{-1}(x)$ :

Range of  $f^{-1}(x)$ :

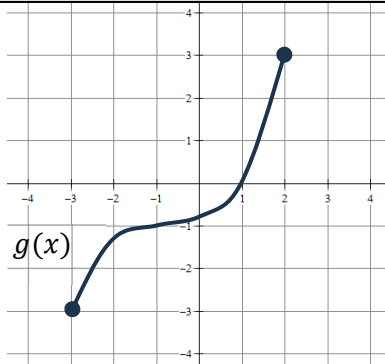
5.  $f(x) = \frac{7}{x+4}$

Domain of  $f^{-1}(x)$ :

Range of  $f^{-1}(x)$ :

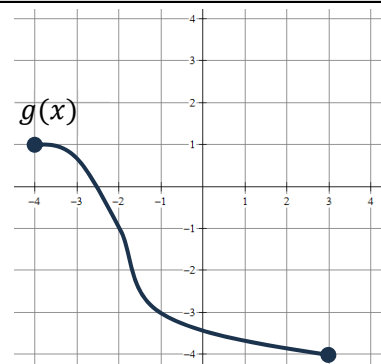
**The graph of a function is given below. Identify if the function is invertible. Sketch the graph of the inverse regardless of whether or not it is invertible.**

6.



Is  $g(x)$  invertible?

7.



Is  $g(x)$  invertible?

Use the tables below to find the given values.

8.

$x$	$f(x)$
-15	0
-10	10
-5	-10
0	-5
5	-15
10	5

- a.  $f(10)$                       d.  $f^{-1}(-10)$   
 b.  $f(0)$                         e.  $f(5)$   
 c.  $f^{-1}(-15)$                 f.  $f^{-1}(-5)$

9.

$x$	$f(x)$
0	17
4	25
12	4
17	20
20	12
25	0

- a.  $f(4)$                             d.  $f^{-1}(20)$   
 b.  $f(25)$                         e.  $f(12)$   
 c.  $f^{-1}(0)$                       f.  $f^{-1}(17)$

Answers to 2.8 CA #2

1. $f^{-1}(x) = \sqrt{x-4} + 10$ Domain: $x \leq 4$ Range: $y \geq 10$	2. $f^{-1}(x) = -\sqrt{x+7} - 1$ Domain: $x \geq -7$ Range: $y \leq -1$	3. $f^{-1}(x) = (x-2)^2 - 3$ Domain: $x \geq 2$ Range: $y \geq -3$	4. $f^{-1}(x) = (x+11)^2 + 6$ Domain: $x \leq -11$ Range: $y \geq 6$
5. $f^{-1}(x) = \frac{7}{x} - 4$ Domain: $\mathbb{R}, x \neq 0$ Range: $\mathbb{R}, y \neq -4$	6. Yes, it is invertible 	7. Yes, it is invertible. 	
8a. 5	8d. -5		9a. 25
8b. -5	8e. -15		9d. 12
8c. 5	8f. -10		9b. 0
			9e. 4
			9c. 25
			9f. 20