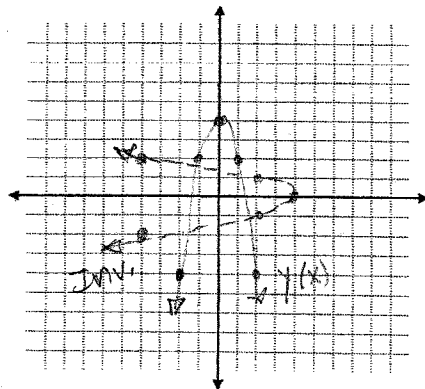


11. Graph  $y = -2x^2 + 4$  and its inverse.

x	y	x	y <sup>-1</sup>
-2	-4	-4	-2
-1	2	2	-1
0	4	4	0
1	2	2	1
2	-4	-4	2



Find  $f^{-1}$ . Determine whether  $f^{-1}$  is a function.

12.  $f(x) = (x+3)^2$

$$x = (y+3)^2$$

$$\sqrt{x} = y+3$$

$$\sqrt{x} - 3 = y \text{ not function}$$

$$f^{-1}(x) = \sqrt{x} + 3$$

13.  $y = 3(x+1)$

$$x = 3(y+1)$$

$$\frac{x}{3} = y+1$$

$$\frac{x}{3} - 1 = y$$

$$f^{-1}(x) = \frac{x}{3} - 1$$

a function

14.  $y = 3x^2 - 2$

$$x = 3y^2 - 2$$

$$x+2 = 3y^2$$

$$y^2 = \frac{x+2}{3}$$

$$y = \sqrt{\frac{x+2}{3}} \text{ not a function}$$

Let  $f(x) = 2x - 1$ . Find each value.

15.  $(f \circ f^{-1})(5)$

$$x = 2y - 1 \quad f^{-1}(x) = \frac{x+1}{2}$$

$$x+1 = 2y \quad f \circ f^{-1}(5) = f\left(\frac{5+1}{2}\right) = f(3) = 2(3) - 1 = 5$$

16.  $(f^{-1} \circ f)(-1)$

$$f^{-1}(f(-1)) = f^{-1}(2(-1) - 1) = f^{-1}(-3)$$

$$= \frac{-3+1}{2} = -1$$

17.  $(f \circ f^{-1})\left(-\frac{1}{2}\right)$

$$f\left(f^{-1}\left(-\frac{1}{2}\right)\right) = f\left(\frac{-\frac{1}{2}+1}{2}\right) = f\left(\frac{1}{4}\right) = 2\left(\frac{1}{4}\right) - 1 = -\frac{1}{2} = -0.5$$

18.  $y = -\sqrt{x} - 1$

	x	$\sqrt{x}$	$-\sqrt{x}$
a: -1	0	0	0
	1	1	-1
h: 0	4	2	-2
k: -1			

Domain:  $x \geq 0$

Range:  $y \leq -1$

19.  $\sqrt[3]{x+2} - 3$

	x	$\sqrt[3]{x}$
a: 1	-8	-2
	-1	-1
h: -2	0	0
k: -3	1	1

Domain:  $\mathbb{R}$  (all Real numbers)

Range:  $\mathbb{R}$

20.  $y = -\sqrt{4x+20} = -\sqrt{4(x+5)} = -2\sqrt{x+5}$

a. Rewrite the function to make it easy to graph using a translation.

x	$\sqrt{x}$	$-2\sqrt{x}$
0	0	0
1	1	-2
4	2	-4
9	3	-6

b. Graph the function.

