

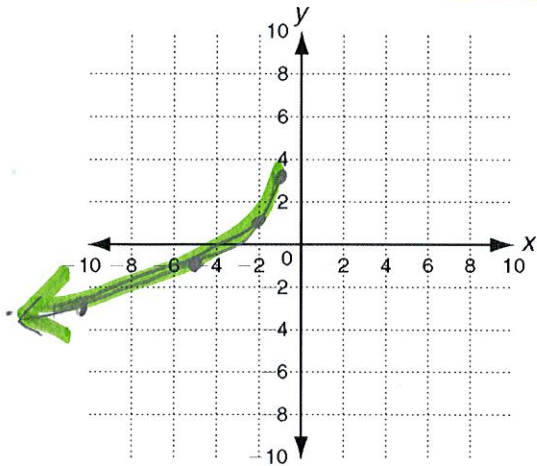
Name Key

Date \_\_\_\_\_

Graph each function, and fill in the chart.

1.  $f(x) = -2\sqrt{-(x+1)} + 3$

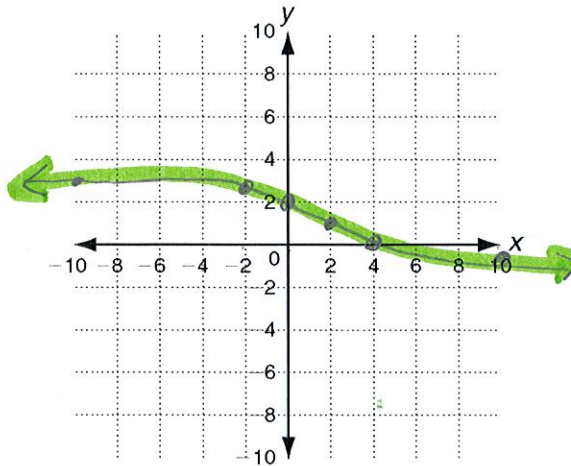
3 read  
graphs



x	y
-1	3
-2	1
-5	-1
-10	-3

2.  $f(x) = \sqrt[3]{-1/2(x-2)} + 1$

back stroke



x	y
-10	2.8
-2	2.5
0	2
2	1
4	0
10	-1

Starting Pt: <u>(-1, 3)</u>	Inc or Dec: <u>INC</u>
Domain: <u><math>(-\infty, -1]</math></u>	Range: <u><math>(-\infty, 3]</math></u>
Abs. Max or Abs Min:	<u>(-1, 3)</u>
End Behavior: x → <u><math>-\infty</math></u> , f(x) → <u><math>-\infty</math></u> x → <u>-1</u> , f(x) → <u>3</u>	

Starting Pt: <u>(2, 1)</u>	Inc or Dec: <u>DEC</u>
Domain: <u><math>(-\infty, \infty)</math></u>	Range: <u><math>\mathbb{R}</math></u>
Abs. Max or Abs Min:	<u>NONE</u>
End Behavior: x → <u><math>-\infty</math></u> , f(x) → <u><math>\infty</math></u> x → <u><math>\infty</math></u> , f(x) → <u><math>-\infty</math></u>	

Using the graph of  $f(x) = \sqrt{x}$  as a guide, describe the transformation.

3.  $g(x) = 4\sqrt{-\frac{1}{3}(x+8)} - 1$

Vertical stretch 4, reflect over y-axis, horizontal stretch 3, left 8, down 1.

4.  $g(x) = -\sqrt{3(x+17)} + 29$

Reflect over x-axis, horizontal shrink by 3, left 17, up 29.

Use the description to write the square root function g.

5. The parent function  $f(x) = \sqrt{x}$  is reflected across the y-axis, vertically stretched by a factor of 7, and translated 3 units down.

$f(x) = 7\sqrt{-x} - 3$

6. The parent function  $f(x) = \sqrt{x}$  is translated 2 units right, compressed horizontally by a factor of  $\frac{1}{2}$ , and reflected across the x-axis.

$f(x) = -\sqrt{2(x-2)}$

7. The parent function  $f(x) = \sqrt{x}$  is compressed vertically by a factor of 4, reflected across the x-axis, and translated 6 units up.

$$f(x) = -\frac{1}{4}\sqrt{x} + 6$$

8. The parent function  $f(x)$  is translated 8 units left, reflected across the y-axis, and stretched horizontally by a factor of 3.

$$f(x) = \sqrt{-\frac{1}{3}(x+8)}$$

Solve each equation.

9.  $\sqrt[3]{4x+1} - 5 = 0$

$$4x+1 = 125$$

$$4x = 124$$

$$x = 31$$

10.  $3\sqrt{x-11} = 18$

$$x-11 = 36$$

$$x = 47$$

11.  $\sqrt[4]{10x+11} = 3$

$$10x+11 = 81$$

$$10x = 70$$

$$x = 7$$

12.  $\sqrt[3]{3x} = \sqrt[3]{2x+9}$

$$3x = 2x+9$$

$$x = 9$$

13.  $x+2 = \sqrt{3x+6}$

$$x^2+4x+4 = 3x+6$$

$$x^2+x-2 = 0$$

$$(x+2)(x-1) = 0$$

$$x = -2 \quad x = 1$$

14.  $(10x-25)^{\frac{1}{2}} = x$

$$10x-25 = x^2$$

$$0 = x^2 - 10x + 25$$

$$0 = (x-5)(x-5)$$

$$x = 5$$

15.  $5(6x+1)^{\frac{1}{4}} = 10$

$$6x+1 = 16$$

$$6x = 15$$

$$x = 2.5$$

16.  $4(7x+18)^{\frac{1}{2}} = 4x$

$$7x+18 = x^2$$

$$0 = x^2 - 7x - 18$$

$$0 = (x-9)(x+2)$$

$$x = 9 \quad x = -2$$

17.  $\sqrt{-14x+2} = x-3$

$$-14x+2 = x^2-6x+9$$

$$0 = x^2+8x+7$$

$$0 = (x+7)(x+1)$$

NO SOLUTION

$$x \neq -7 \quad x \neq -1$$

18.  $(x+4)^{\frac{1}{2}} = 6$

$$x+4 = 36$$

$$x = 32$$

19.  $4(x-3)^{\frac{1}{2}} = 8$

$$x-3 = 4$$

$$x = 7$$

20.  $4(x-12)^{\frac{1}{3}} = -16$

$$x-12 = -64$$

$$x = -52$$