

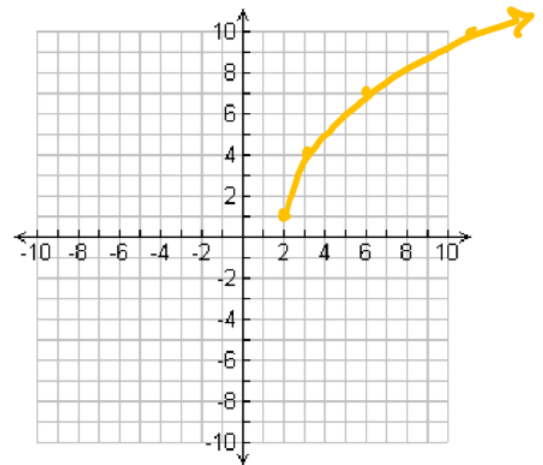
Unit 4C Test Review

Name \_\_\_\_\_

Graph the following functions & fill in the transformations and domain & range for each.

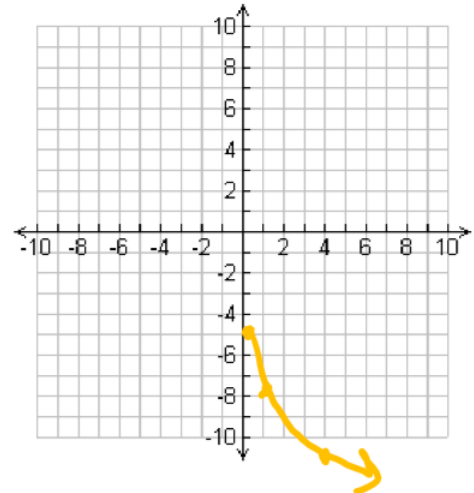
1.  $y = 3\sqrt{x-2} + 1$        $a = 3$     $h = 2$     $k = 1$

Horizontal Shift      right 2  
 Vertical Shift        up 1  
 Stretch/Shrink       stretch  
 Reflect?               None  
 Domain                  $[2, \infty)$   
 Range                   $[1, \infty)$



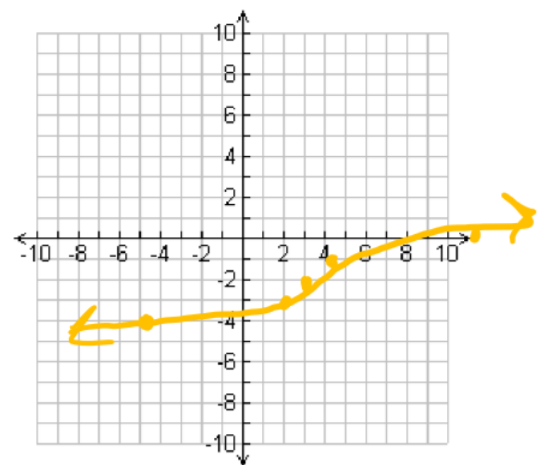
2.  $y = -3\sqrt{x} - 5$        $a = -3$     $h = 0$     $k = -5$

Horizontal Shift      None  
 Vertical Shift        down 5  
 Stretch/Shrink       stretch  
 Reflect?               yes  
 Domain                  $[0, \infty)$   
 Range                   $(-\infty, -5]$



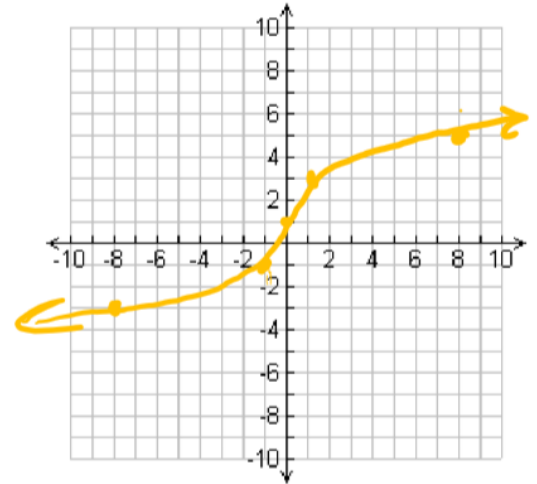
3.  $y = \sqrt[3]{x-3} - 2$        $a = 1$     $h = 3$     $k = -2$

Horizontal Shift      right 3  
 Vertical Shift        down 2  
 Stretch/Shrink       no  
 Reflect?               no  
 Domain                  $(-\infty, \infty)$   
 Range                   $(-\infty, \infty)$



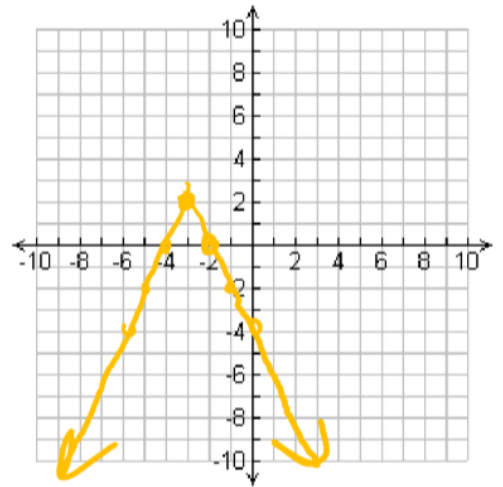
4.  $y = 2\sqrt[3]{x-1}$        $a = \underline{2}$     $h = \underline{1}$     $k = \underline{0}$

Horizontal Shift    right 1  
 Vertical Shift      none  
 Stretch/Shrink    Stretch  
 Reflect?            No  
 Domain               $(-\infty, \infty)$   
 Range                 $(-\infty, \infty)$



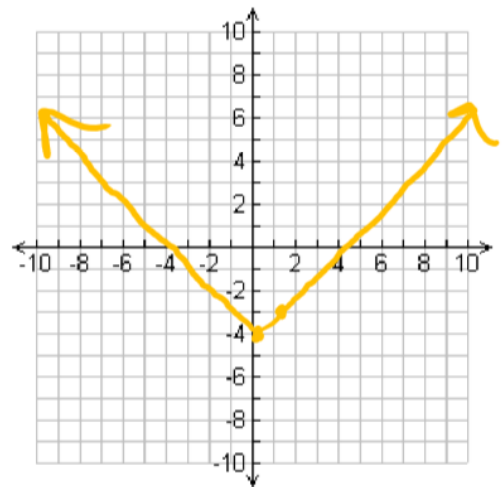
5.  $y = -2|x+3| + 2$        $a = \underline{-2}$     $h = \underline{-3}$     $k = \underline{2}$

Horizontal Shift    left 3  
 Vertical Shift      up 2  
 Stretch/Shrink    Stretch  
 Reflect?            yes  
 Domain               $(-\infty, \infty)$   
 Range                 $(-\infty, 2]$



6.  $y = |x| - 4$     $a = \underline{1}$     $h = \underline{0}$     $k = \underline{-4}$

Horizontal Shift    none  
 Vertical Shift      down 4  
 Stretch/Shrink    None  
 Reflect?            No  
 Domain               $(-\infty, \infty)$   
 Range                 $[-4, \infty)$



Solve each equation. Remember to check for extraneous solutions.

7)  $-6 = -10 + \sqrt{4n}$

$4 = \sqrt{4n}$

$16 = 4n$

$4 = n$

8)  $r = \sqrt{110 - r}$

$r^2 = 110 - r$

$r^2 + r - 110 = 0$

$(r+11)(r-10) = 0$

~~$r = -11$~~   $r = 10$

Check

$-11 = \sqrt{110 - (-11)}$   
 $-11 \neq 11$

$10 = \sqrt{110 - 10}$   
 $10 = 10 \checkmark$

9)  $\sqrt{-6 - x} = \sqrt{2x + 24}$

$-6 - x = 2x + 24$

$-30 = 3x$

$-10 = x$

10)  $x + 2 = \sqrt{7x + 2}$

$(x+2)^2 = 7x + 2$

$x^2 + 4x + 4 = 7x + 2$

$x^2 - 3x + 2 = 0$

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

$x = 1 \quad x = 2$

Check

$(1+2) = \sqrt{7(1)+2}$   
 $3 = 3 \checkmark$

$(2+2) = \sqrt{7(2)+2}$   
 $4 = 4 \checkmark$

11)  $-4 = -x + \sqrt{2x - 8}$

$(x-4)^2 = \sqrt{2x-8}^2$

$(x-4)(x-4)$

$x^2 - 8x + 16 = x^2 - 8x + 8$

$x^2 - 10x + 24 = 0$

$(x-6)(x-4) = 0$

$x = 6$

$x = 4$

13)  $-3 = -8 + \sqrt{x-2}$

$5 = \sqrt{x-2}$

$25 = x-2$

$27 = x$

12)  $\sqrt{-2 - 4r} = \sqrt{2r + 10}$

$-2 - 4r = 2r + 10$

$-12 = 6r$

$-2 = r$

14)  $\sqrt{56 - a} = a$

$56 - a = a^2$

$a^2 + a - 56 = 0$

$(a-7)(a+8) = 0$

$a = 7 \quad a = -8$

Check

$\sqrt{56 - (7)} = 7$

$7 = 7 \checkmark$

$\sqrt{56 - (-8)} = -8$   
 $8 \neq -8$

Solve each equation.

15)  $|r+3|=1$

$$\begin{aligned} r+3 &= 1 & r+3 &= -1 \\ r &= -2 & r &= -4 \end{aligned}$$

16)  $-3+|p-1|=5$

$$\begin{aligned} |p-1| &= 8 \\ p-1 &= 8 & p-1 &= -8 \\ p &= 9 & p &= -7 \end{aligned}$$

17)  $9|10-5n|-7=38$

$$\begin{aligned} 9|10-5n| &= 45 \\ |10-5n| &= 5 \end{aligned}$$

$$\begin{aligned} 10-5n &= 5 & 10-5n &= -5 \\ n &= -1 & n &= 3 \end{aligned}$$

18)  $1-3|1-6p|=-110$

$$\begin{aligned} -3|1-6p| &= -111 \\ |1-6p| &= 37 \end{aligned}$$

$$\begin{aligned} 1-6p &= 37 & 1-6p &= -37 \\ p &= -6 & p &= \frac{38}{6} = \frac{19}{3} \end{aligned}$$

Given the following piecewise functions, evaluate for the given value of  $x$ :

$$f(x) = \begin{cases} x-3, & x < -2 \\ x^2+1, & x \geq -2 \end{cases}$$

$$g(x) = \begin{cases} -x+5, & x \leq 1 \\ 3x+2, & x > 1 \end{cases}$$

$$h(x) = \begin{cases} x-2, & x \leq -3 \\ \frac{1}{4}x, & x > -3 \end{cases}$$

$$j(x) = \begin{cases} x+1, & x < -6 \\ |x-5|, & -6 \leq x \leq 4 \\ 2x, & x > 4 \end{cases}$$

19.  $f(-2) = 5$

20.  $j(-4) = 9$

21.  $g(-3) = 8$

22.  $h(0) = 0$

23.  $h(15.2) = 3.8$

24.  $j(9) = 18$

25.  $h(-5) = -7$

26.  $f(-4) = -7$

27.  $g\left(\frac{1}{2}\right) = 4.5$