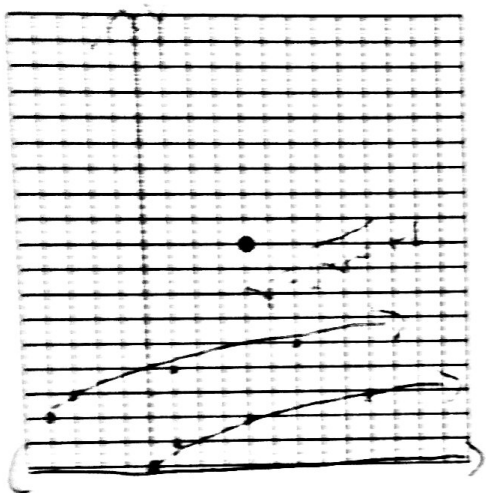


Name: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Class: \_\_\_\_\_

Algebra  
 Unit 10  
 HW 10-4

1) Graph both  $y = \sqrt{x+4} + 2$  and  $y = \sqrt{x}$  on the same graph. Describe the change that the 2<sup>nd</sup> equation must go through to become the 1<sup>st</sup> equation.



x	y	x	y
-4	2	0	1
-3	3	1	1
0	4	4	2
5	5	9	3

left 4  
 up 2

2) Create a function that would shift  $g(x) = \sqrt{x-9} + 4$  to the left 8 units and up 9.

↑ add 8 under    ↑ add 9 outside

$$f(x) = \sqrt{x-9+8} + 4+9$$

$f(x) = \sqrt{x-1} + 13$

3) Describe the transformation that  $y = 2^x$  would have to go through to become  $y = 2^{x-4} + 7$ .

4 to the right  
 up 7

4) Create an equation that would move  $y = 5^{x+2} - 7$  down 2 units and to the right 7 units.

↑ subtract 2 at end    ↑ subtract 7 in exp

$$y = 5^{x+2-7} - 7-2$$

$y = 5^{x-5} - 9$

5) Solve:  $81 - x^2 + 18x = 125 - 2x^2$   
 $-125 + 2x^2 \quad -125 + 2x^2$

$$\sqrt{(x+9)^2} = \sqrt{125}$$

$$\begin{array}{r} x^2 + 18x - 44 = 0 \\ +44 \quad +44 \\ \hline x^2 + 18x + 81 = 44 + 81 \end{array}$$

$$\begin{array}{r} x+9 = \pm\sqrt{125} \\ -9 \quad -9 \\ \hline x = -9 \pm\sqrt{125} \\ x = -9 \pm\sqrt{25 \cdot 5} \end{array}$$

$$x = -9 \pm 5\sqrt{5}$$

$$\frac{18}{2} = (+9)^2 = +81$$

6) Find the solution to the system:  $g(x) = 3x^2 + 2x + 16$  and  $y(x) = 432 + 3x^2 + 10x$

$$\begin{array}{r} 3x^2 + 2x + 16 = 432 + 3x^2 + 10x \\ -3x^2 \quad -10x \quad -432 \quad -432 \quad -3x^2 \quad -10x \\ \hline -8x - 416 = 0 \end{array}$$

$$\begin{array}{r} 3(-52)^2 + 2(-52) + 16 \\ = 8024 \end{array}$$

$$\begin{array}{r} -8x - 416 = 0 \\ +416 \quad +416 \\ \hline -8x = 416 \\ \frac{-8x}{-8} = \frac{416}{-8} \\ x = -52 \end{array}$$

$$(-52, 8024)$$

7) Find the zeros to the function:  $h(x) = 15x^2 - 18x + 5$

$$0 = \frac{15x^2}{15} - \frac{18x}{15} + \frac{5}{15}$$

$$0 = x^2 - \frac{18}{15}x + \frac{5}{15}$$

$$\frac{9}{25} + \frac{-5}{15} = x^2 - \frac{18}{15}x + \frac{9}{25}$$

$$\frac{-18}{15} = \left(\frac{-18}{30}\right)^2 = \frac{9}{25}$$

$$\sqrt{\frac{2}{75}} = \sqrt{\left(x - \frac{18}{30}\right)^2}$$

$$\begin{array}{r} +\sqrt{\frac{2}{75}} = x - \frac{18}{30} \\ +\frac{18}{30} \quad +\frac{18}{30} \end{array}$$

$$\begin{array}{l} \frac{18}{30} \pm \sqrt{\frac{2}{75}} = x \\ \left( \begin{array}{l} \frac{18}{30} + \sqrt{\frac{2}{75}} = x \\ \frac{18}{30} - \sqrt{\frac{2}{75}} = x \end{array} \right. \\ \left. \begin{array}{l} 76 = x \\ 44 = x \end{array} \right) \end{array}$$