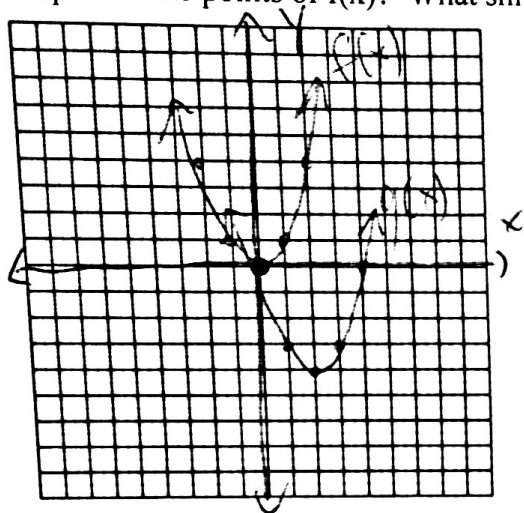


Name: _____
 Date: _____
 Class: _____

Algebra
 Unit 10
 HW 10-3

1) Graph both $g(x) = (x-2)^2 - 4$ and $f(x) = x^2$. How do the points of $g(x)$ compare to the points of $f(x)$? What shift of $f(x)$ would move it to $g(x)$?



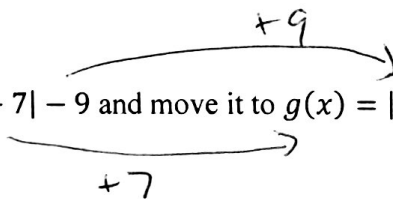
x	y	x	y
0	0	-2	4
1	3	-1	1
2	4	0	0
3	3	1	1
4	0	2	4

$g(x)$ is $f(x)$ moved right 2 + down 4
 Vertex (0,0)
 to
 Vertex (2,-4)

2) Describe the shift that would take $y = x^2$ to $y = (x-8)^2 + 5$. What would the vertex of each equation be?

right 8, up 5 \uparrow \uparrow
 (0,0) (8,5)

3) Describe the shift that would take $f(x) = |x-7| - 9$ and move it to $g(x) = |x|$.



up 9
 left 7

backwards from moving $g(x)$ to $f(x)$

4) Create an equation that would move $y = |x-2| + 6$ to the right 6 and down 5.

subtract 6 inside \uparrow
 subtract 5 outside

$$y = |x-2-6| + 6-5$$

$$y = |x-8| + 1$$

5) Create an equation that would move $y = (x + 6)^2 - 10$ to the right ~~9~~ and up 16.

9
 \uparrow Subtract 9 inside
 \nwarrow add 16 outside

$$y = (x + 6 - 9)^2 - 10 + 16$$

$$\boxed{y = (x - 3)^2 + 6}$$

6) Solve using complete the square: $\frac{9x^2}{9} - \frac{14x}{9} + \frac{19}{9} = 0$

$$-\frac{14}{2} = \left(\frac{-14}{4}\right)^2 = \left(\frac{49}{4}\right)$$

$$x^2 - \frac{14}{9}x + \frac{19}{9} = 0$$

$$x^2 - \frac{14}{9}x + \frac{49}{9} = -\frac{19}{9} + \frac{49}{9}$$

$$\left(x - \frac{14}{4}\right)^2 = \sqrt{\frac{365}{36}}$$

$$x - \frac{14}{4} = \pm \sqrt{\frac{365}{36}}$$

$$+ \frac{14}{4} \quad + \frac{14}{4}$$

$$\boxed{x = \frac{14}{4} \pm \sqrt{\frac{365}{36}}}$$

7) Find the zeros of the function: $f(x) = x^2 - 8x - 56$

$$0 = x^2 - 8x - 56$$

$$+56 \quad +56$$

(Comp Square)

$$16 + 56 = x^2 - 8x + 16$$

$$\frac{-8}{2} = (-4)^2 = 16$$

$$\sqrt{72} = \sqrt{(x-4)^2}$$

$$\pm \sqrt{72} = x - 4$$

$$+4 \quad +4$$

$$4 \pm \sqrt{72} = x$$

$$4 \pm \sqrt{36} \sqrt{2} = x$$

$$\boxed{4 \pm 6\sqrt{2} = x}$$