

# Homework: Quadratic Up!



Name: Keira

Alg. 1 H - Date: Feb. 28

Glue this foldable on page 58

Created for you by Ms. Nhotsouanh

1.) Rewrite the equation for  $f(x) = x^2 - 12x + 7$  in vertex form and then state the ordered pair that represents the minimum value.

$$y = a(x-h)^2 + K$$
$$f(x) = (x-6)^2 - 29$$

vertex  
(h, K)  
(6, -29)

\* use calc to get vertex

2.) Now use the discriminant to determine the nature of the roots of the equation for  $f(x) = x^2 - 12x + 7$ .  $a=1, b=-12, c=7$

$$b^2 - 4ac$$
$$(-12)^2 - 4(1)(7)$$
$$144 - 28$$
$$116$$

discriminant

The roots are 2 irrational unequal roots

3.) Use the quadratic formula to find the roots of the equation for  $f(x) = x^2 - 12x + 7$ .

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

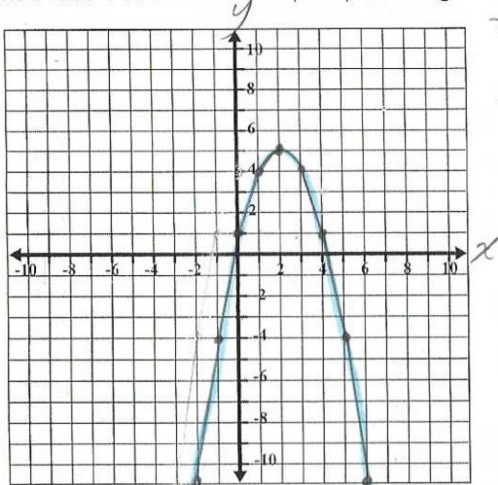
$$\frac{\sqrt{116}}{2}$$
$$\frac{\sqrt{4 \cdot 29}}{2}$$
$$2\sqrt{29}$$

$$x = \frac{-(-12) \pm \sqrt{116}}{2(1)}$$

$$x = \frac{12 \pm 2\sqrt{29}}{2} = 6 \pm \sqrt{29}$$

simplify

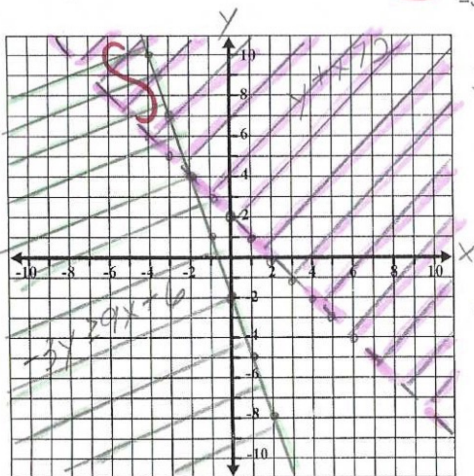
4.) Graph the given function,  $f(x) = -(x-2)^2 + 5$  (hint: use the vertex and the  $a$  value to determine the next points). Don't forget to include the table.



vertex  
(2, 5)  
 $a = -1$

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

5.) Graph the following systems of inequalities on the set of axes shown below and label the solution set S:  $y + x > 2$   
 $-3y \geq 9x + 6$



$y + x > 2$   
 $-x -x$   
 $y > -x + 2$   
 $m = -\frac{1}{1}, b = 2$   
Shade UP dotted line

$-3y \geq 9x + 6$   
 $-\frac{3y}{3} \geq \frac{9x}{3} + \frac{6}{3}$   
 $y \leq -3x - 2$   
 $m = -\frac{3}{1}, b = -2$   
Solid line shade  $\downarrow$

6.) At the local video rental store, Ian rents two movies and three games for a total of \$15.50. At the same time, Summer rents three movies and one game for a total of \$12.05. How much money is needed to rent a combination of one game and one movie?  
\*This is before streaming was a thing.

Let  $m = \$$  movie  
 $g = \$$  game

$$\begin{array}{r} 2m + 3g = 15.50 \\ -3(3m + 1g = 12.05) \\ \hline 2m + 3g = 15.50 \\ -9m - 3g = -36.15 \\ \hline -7m = -20.65 \\ -7 \phantom{m} \phantom{=} -7 \\ \hline m = 2.95 \end{array}$$

for a movie

$$\begin{array}{r} 3(2.95) + g = 12.05 \\ 8.85 + g = 12.05 \\ -8.85 \phantom{=} -8.85 \\ \hline g = 3.20 \end{array}$$

for a game

7.) Solve the inequality and state the largest possible value for  $x$  in the solution set.  $12 - 6(2m - 4) \geq 8m - 2(7 + 5m)$

$$\begin{array}{r} 12 - 12m + 24 \geq 8m - 14 - 10m \\ 36 - 12m \geq -2m - 14 \\ +2m \phantom{m} +2m \\ \hline 36 - 10m \geq -14 \\ -36 \phantom{m} -36 \\ \hline -10m \geq -50 \\ -10 \phantom{m} -10 \\ \hline m \leq 5 \end{array}$$

$\div$  by a neg  
flip  
inequality  
symbol

~~5 <= x <= 5~~  
5 is the largest possible value.