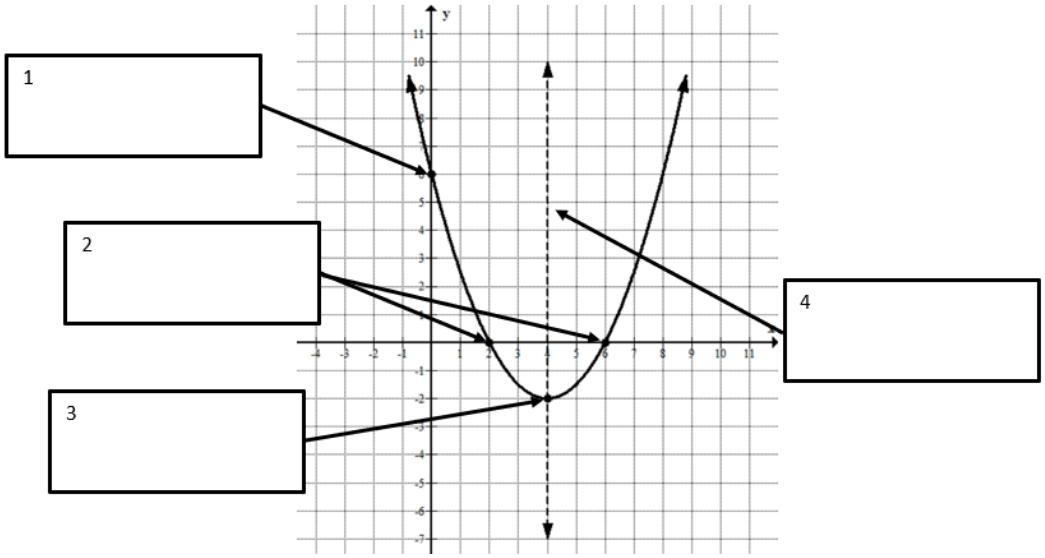
PreCalc 11 Chapter 4 Assignment – hand in for completion marks

Name: _____

Complete the following questions showing all work and steps where applicable.

1a) Add the correct term to name each characteristic shown in the boxes.



b) vertex coordinates:

c) minimum of this function is:

d) axis of symmetry equation:

e) x-intercept coordinates are:

f) y-intercept coordinates:

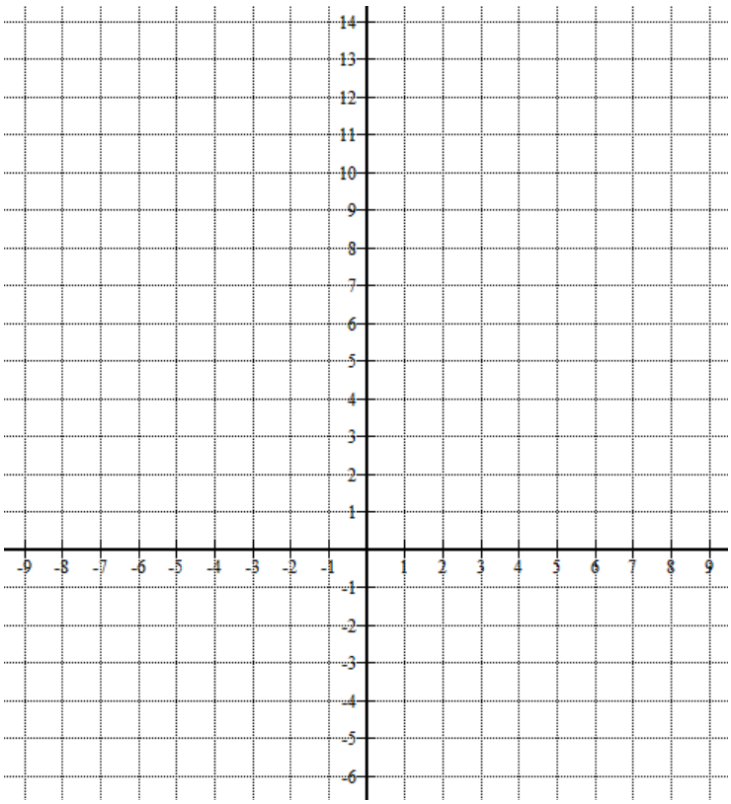
g) range:

2. Complete the table below.

Function	**Direction of opening**	**Vertex**	**Axis of Symmetry Equation**	**Is it congruent (exact same size/shape) to $y = x^2$?**
$y = x^2$	up	$(0,0)$	$x = 0$	yes
$y = 3x^2 + 5$				
$y = -x^2 - 9$				
$y = (x+6)^2$				
$y = 5(x-2)^2$				

3. **Accurately graph** each function below on the provided grid. Correctly plot 7 points for each graph.

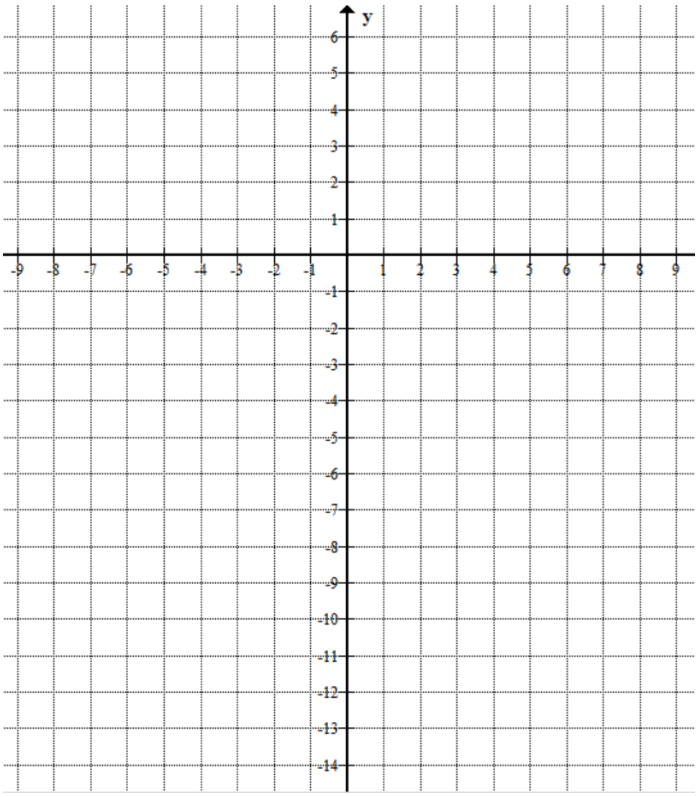
a) $y=(x-1)^2-2$



Domain:

Range:

b) $y=-2(x+4)^2+5$



Domain:

Range:

4. Use the following information, determine the equation of the quadratic function.

The vertex of the graph is at (-3, 2) and one of the x-intercepts is at (-1,0).

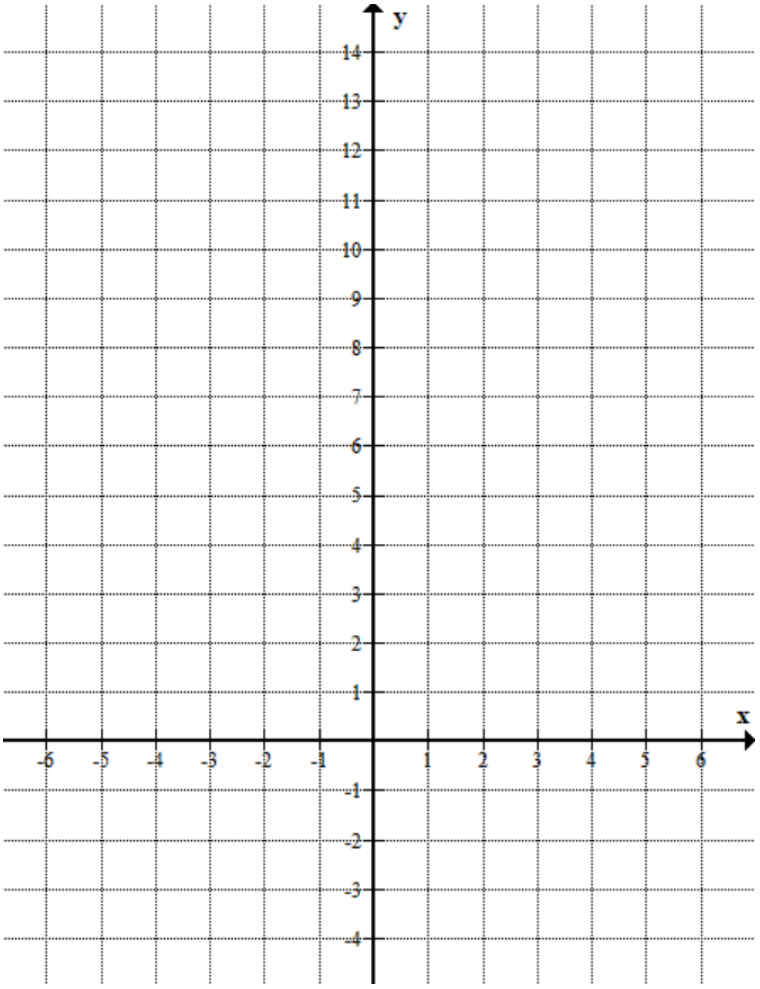
5. Give the requested characteristics of this function: $y = -2(x+1)^2 + 8$

a) coordinates of the vertex

b) direction of opening

c) equation of the axis of symmetry

d) coordinates of the x-intercepts



e) coordinates of the y-intercept

f) value of the Max or Min

g) domain

h) range

i) For the parabola's graph, **accurately plot 5 points. Using a dotted line, graph the axis of symmetry.**

6. Convert each of the following equations to standard/vertex form by completing the square.

a) $y = x^2 - 4x + 9$

b) $y = 2x^2 - 12x + 16$

c) $y = 2x^2 - 8x + 9$

7. Complete the table below.

	$y = x^2 + 6x + 8$	$y = -3x^2 + 14x + 5$
direction of opening		
Coordinates of the y-intercept		
Coordinates of the x-intercepts *Hint: convert to factored form*		
equation of the axis of symmetry *Hint: you do NOT have to change to vertex form to find this*		

8. Every week, a take-out restaurant sells approximately 2000 chicken wraps for $1.50 each. Through market research, the restaurant manager determines that for every $0.10 increase in price, she will sell 100 fewer wraps.

Let x = the number of $0.10 increases in price

a) Create an equation that describes the revenue this restaurant will receive from selling these wraps.

b) Change the equation into vertex form by completing the square.

c) Find the price of wrap that maximizes the revenue

d) Find the maximum revenue

9. Two numbers have a difference of 22.

Let x = one of the numbers

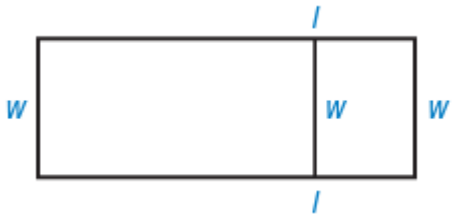
a) Create an equation that can be used to find the minimum product.

b) Change the equation into vertex form by completing the square.

c) Find the two numbers that produce the minimum product.

d) Find the minimum product.

10. A rectangular area is divided into 2 rectangles with 750 m of fencing used for the perimeter and the divider, as shown in the diagram. In the diagram, *w = width* and *l = length*.



a) Create an equation that can be used to find the maximum area one can enclose with this fence.

b) Change the equation into vertex form by completing the square.

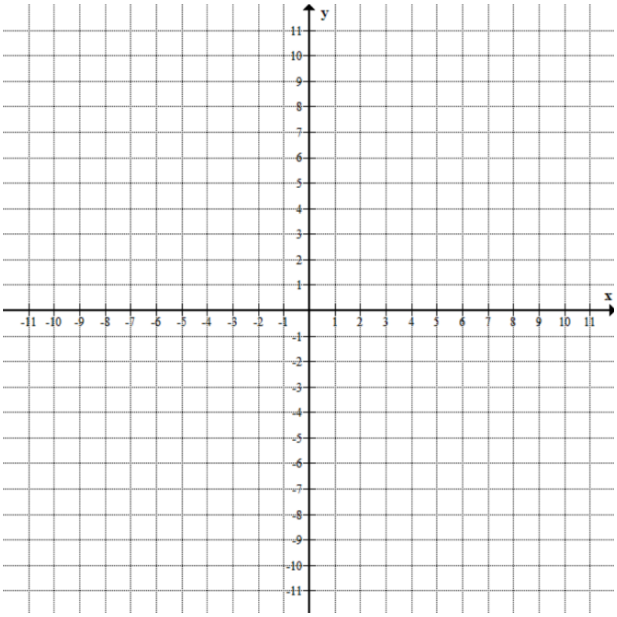
c) What values for *w* and *l* give the largest area?

d) What is that maximum area?

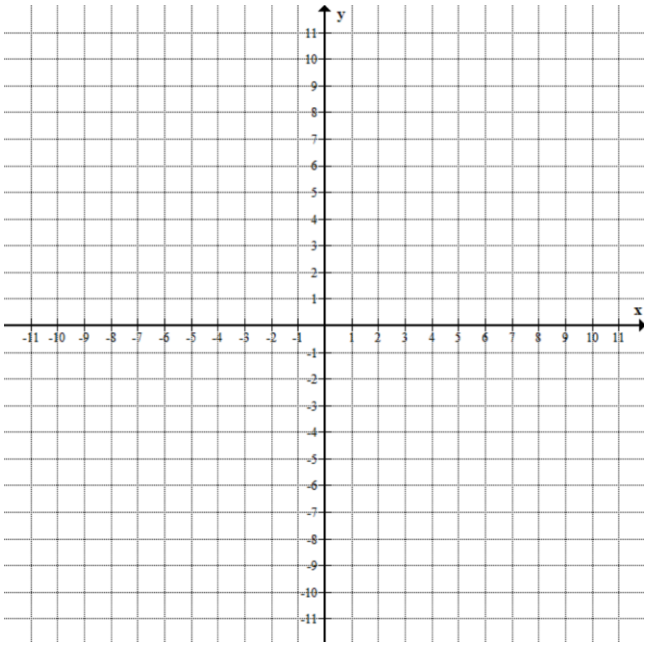
11. Graphically solve the following inequalities. Show the graph and your final solution.

a) $2x+1<5+4x$

b) $2(x-1)^2-8\geq 0$

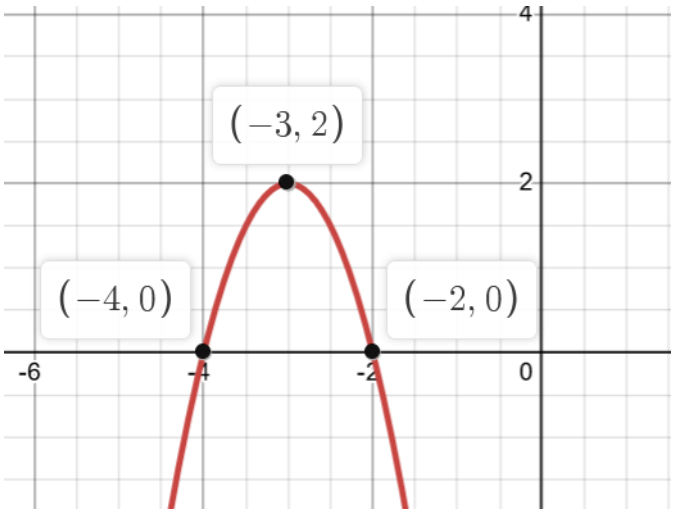


Solution:



Solution:

12. Below is the graph of $y=-2x^2-12x-16$.



Consider this inequality.

$$-2x^2-12x-16\geq 0$$

Give its solution, in interval notation.

13. Solve this linear inequality algebraically. Show the solution on a number line **and** give the solution in interval notation.

$$3x+2 \le -5x+14$$

14. Solve this quadratic inequality algebraically. Show the solution on a number line **and** also write the solution in interval notation.

$$3x^2-5x+1 > -16x+7+x^2$$