

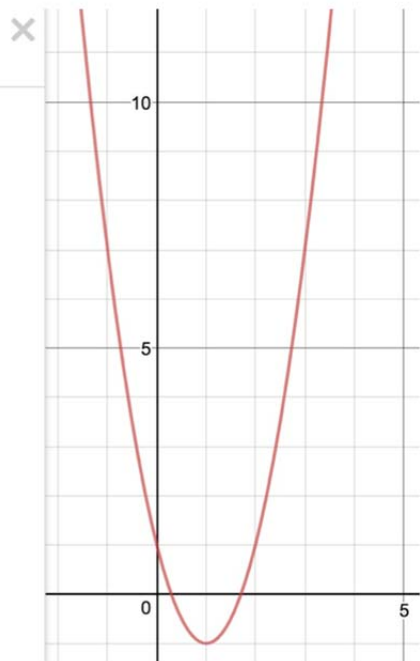
10.3 Quadratics in Standard Form

ALGEBRA

Write your questions here!



$$y = 2x^2 - 4x + 1$$



Standard Form:

Axis of Symmetry:

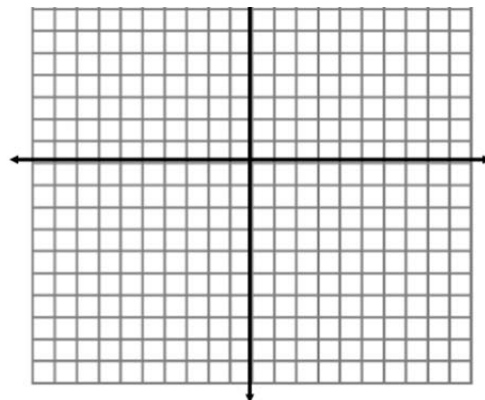
Vertex (max/min):

Y-int:

X-int (approx.):

Ex 1:

Vertex:

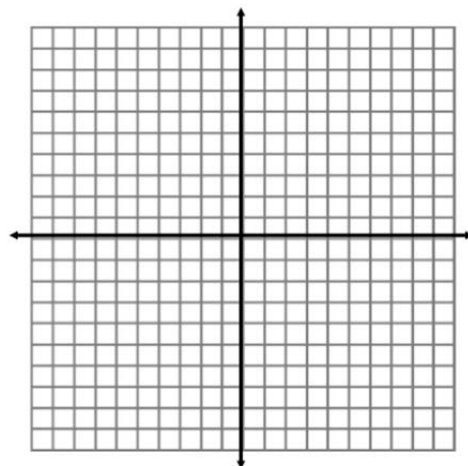


Y-int:

X-ints (approx.):

Ex 2:

Vertex:



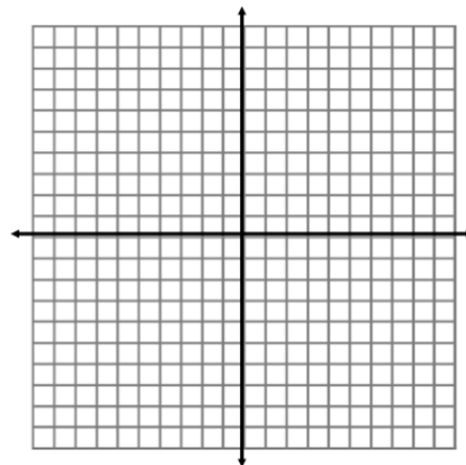
Y-int:

X-ints (approx.):

Ex 3:
Vertex:

Y-int:

X-ints (approx.):



Ex 4: Find the maximum or minimum point and the y-intercept of each function.

a)

b)

SUMMARY:

Now,
summarize
your notes
here!



10.3 Quadratics in Standard Form

PRACTICE

Directions: Use the following functions to find the best answers for #1 - 3.

$$f(x) = 4x^2 - 8x + 10; \quad g(x) = 2(x + 4)^2 - 1; \quad h(x) = (x + 4)(x + 2)$$

1) Which function has the lowest minimum value?

- a) $f(x)$
- b) $g(x)$
- c) $h(x)$
- d) $g(x)$ and $h(x)$

2) Which function has the lowest y-intercept?

- a) $f(x)$
- b) $g(x)$
- c) $h(x)$
- d) $f(x)$ and $h(x)$

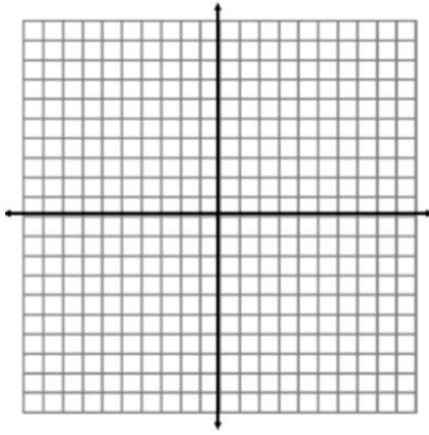
3) Which function is the widest?

- a) $f(x)$ because the leading coefficient is the greatest.
- b) $g(x)$ because its in vertex form.
- c) $h(x)$ because its leading coefficient is the smallest.
- d) They are all the same because they are all quadratics.

Directions: Graph each function. Then answer the questions. Plot the vertex and at least 2 other points, more if possible.

4) $f(x) = 2x^2 - 8x + 4$

Vertex:

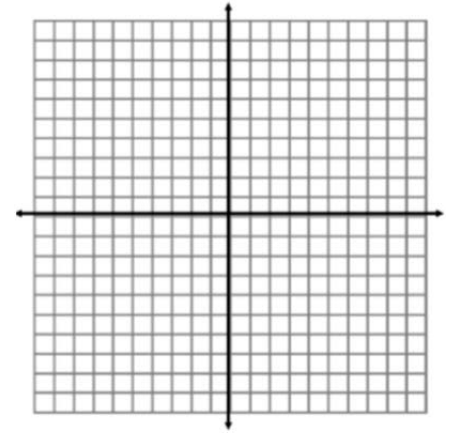


Y-int:

X-ints (approx.):

5) $f(x) = -x^2 - 4x + 4$

Vertex:

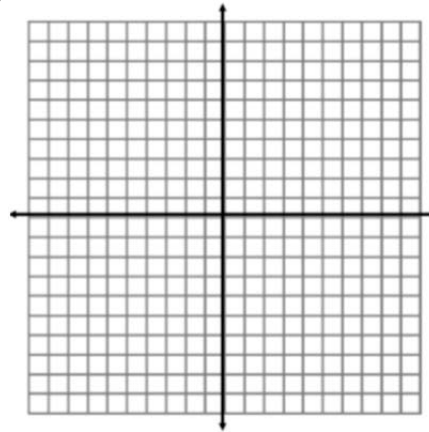


Y-int:

X-ints (approx.):

6) $f(x) = -0.5x^2 + 5x - 6$

Vertex:

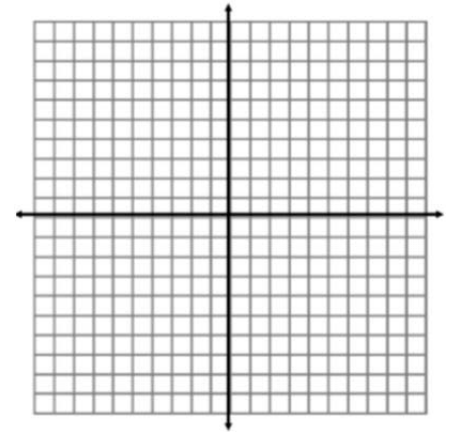


Y-int:

X-ints (approx.):

7) $f(x) = x^2 + 4x - 6$

Vertex:

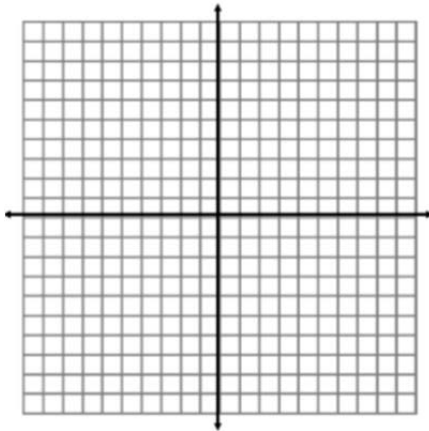


Y-int:

X-ints (approx.):

8) $f(x) = -2x^2 - 8x + 1$

Vertex:

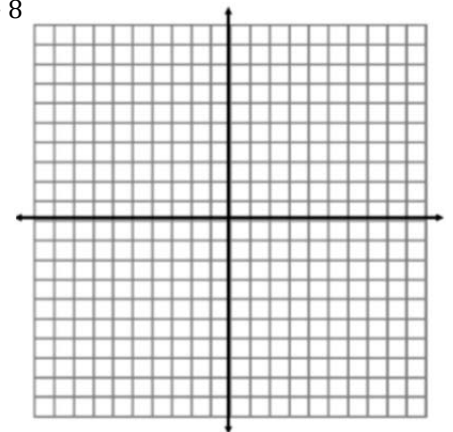


Y-int:

X-ints (approx.):

9) $f(x) = -0.5x^2 - 6x - 8$

Vertex:

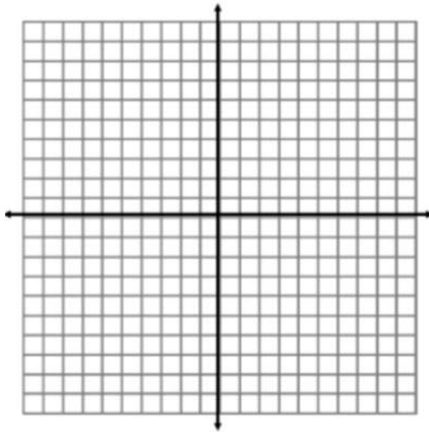


Y-int:

X-ints (approx.):

10) $f(x) = x^2 + 2x - 5$

Vertex:

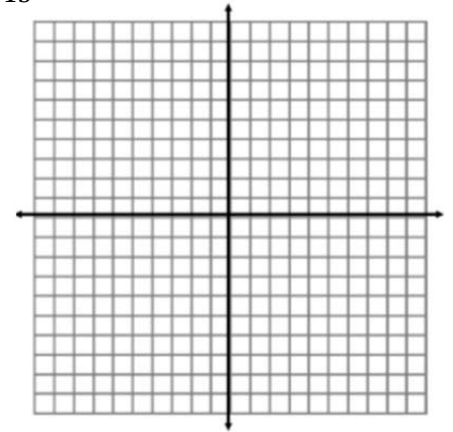


Y-int:

X-ints (approx.):

11) $f(x) = -x^2 - 10x - 15$

Vertex:



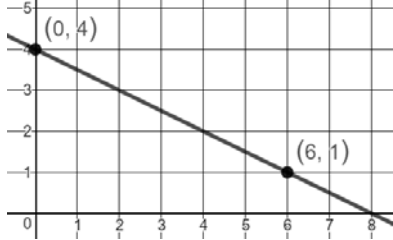
Y-int:

X-ints (approx.):

Directions 12-13: Solve each system.

12) $6x - 8y = -4$
 $4x + 2y = -10$

13) $2x + 8y = -16$
 $y = x - 12$

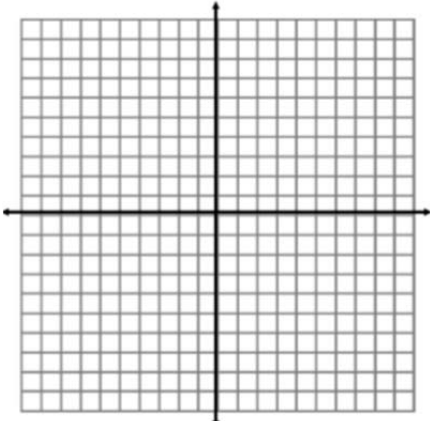
Identify the type of relationship and create a function from the given information.14) Use x and $f(x)$ for your variables.15) There are 100 rodents in a barn. Every month m , the rodent population p increases by 200%.**Determine whether each function has a maximum or minimum point and then find the value.**

16) $f(x) = 3x^2 + 18x - 5$

17) $f(x) = -10x^2 - 200x + 100$

18) $f(x) = -0.75x^2 + 33x - 5.5$

19) $f(x) = 4000x^2 - 5$

Directions: Graph each function. Then answer the questions. Plot the vertex and at least 2 other points, more if possible.	Directions: Use the following functions to find the best answer. $f(x) = x^2 - 6x + 13$; $g(x) = (x - 3)^2 + 4$
<p>1) $f(x) = 2x^2 - 8x + 4$</p> <p>Vertex:</p> <p>Y-int:</p> <p>X-ints (approx.):</p> 	<p>2) Which statement(s) are true.</p> <p>a) $f(x)$ has a higher y-intercept than $g(x)$ and is wider.</p> <p>b) $g(x)$ has a lower minimum value than $f(x)$ and is wider.</p> <p>c) $g(x)$ has the same maximum value as $f(x)$ but has a lower y-intercept.</p> <p>d) $f(x)$ and $g(x)$ have the same minimum value, y-intercept because they are the same.</p>

3) Mr. Kelly throws his computer out the window. The computer's height (in feet above the ground), t seconds after Mr. Kelly threw it is modeled by:

$$h(t) = -4t^2 + 40t + 20$$

How many seconds will it take the computer to reach its maximum height?

SMP #2

4) Mr. Bean is standing on the side of the highway in France waiting for a tow truck. He throws a football to his son on the other side of the highway. The ball's height (in feet above the ground), x seconds after Mr. Bean threw it is modeled by:

$$f(x) = -3x^2 + 12x + 5$$

What is the maximum height the football will reach?

5) Mr. Brust is standing on the roof of his house and throws a water balloon down at his son, who is at ground level. The balloon's height (in feet above the ground), t seconds after Mr. Brust throws it is modeled by:

$$h(t) = -t^2 + 23.5t + 18$$

What is the height of the water balloon at the time that it is thrown?

EXIT TICKET –

The point $(4, -4)$ is the vertex of the graph of a quadratic function. Complete the graph by finding two other points, and then answer the questions.

a) What are TWO other points of this quadratic?

b) How do you know they are points?

c) Find the y-intercept?

d) Find the interval on the graph where the rate of change is always positive.

e) What is the sign of the leading coefficient? How do you know?

f) What is the leading coefficient? How do you know?

