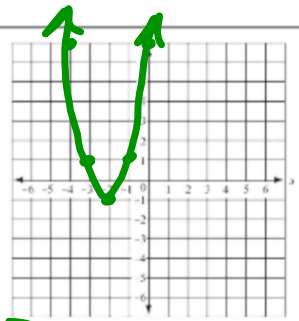


## Grab a Week #11 Packet!

Monday 10/28

Write a quadratic function in standard form whose graph satisfies the given conditions:  
 Passes through the vertex  $(-2, -1)$  and a y-intercept of  $(0, 7)$



$$y = a(x-h)^2 + k$$

$$7 = a(0 - (-2))^2 - 1$$

$$7 = 4a - 1$$

$$\frac{8}{4} = \frac{4a}{4}$$

$$2 = a$$

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

$$2(x+2)(x+2) - 1$$

# Get out Day 2 to correct!

Key

Writing Quadratic Equations Day 2: Given the Zeros (roots, solutions, x intercepts) or a Graph

1-8. Write a quadratic equation in standard form with the given solutions.

1.  $x = 4, 1$

$$f(x) = (x-4)(x-1)$$

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

2.  $x = -5, -2$

$$f(x) = (x+5)(x+2)$$

$$f(x) = x^2 + 7x + 10$$

3.  $x = 7, 0$

$$(x-7)(x-0) \text{ or } x(x-7)$$

$$f(x) = x^2 - 7x$$

4.  $x = \frac{1}{2}, 8$

$$(2x-1)(x-8)$$

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

$$f(x) = 2x^2 - 17x + 8$$

5.  $x = \frac{3}{5}, 0$

$$x(5x-3)$$

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

6.  $x = \frac{2}{3}, -2$

$$(3x-2)(x+2)$$

$$3x^2 + 6x - 2x - 4$$

$$f(x) = 3x^2 + 4x - 4$$

7.  $x = -3, 1$

$$(x+3)(x-1)$$

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

8.  $x = -\frac{1}{3}, 2$

$$(3x+1)(x-2)$$

$$3x^2 - 6x + x - 2$$

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

9. Write a quadratic equation given: vertex form

Vertex: (3, 1) and a point (5, -1)

$h$   $k$        $x$   $y$

$$-1 = a(5-3)^2 + 1$$

$$-1 = 4a + 1$$

$$-2 = 4a$$

$$\frac{-2}{4} = a$$

$$a = -\frac{1}{2}$$

$$y = -\frac{1}{2}(x-3)^2 + 1$$

10. Write a quadratic equation given: vertex form

Vertex: (-1, 5) and x-intercept of 3 (3, 0)

$h$   $k$

$$0 = a(3+1)^2 + 5$$

$$-5 = 16a + 5$$

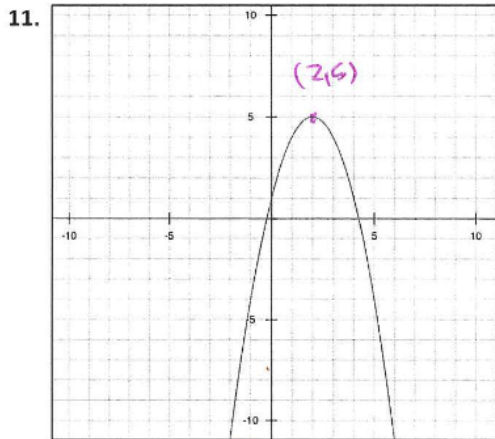
$$-10 = 16a$$

$$\frac{-10}{16} = a$$

$$a = -\frac{5}{8}$$

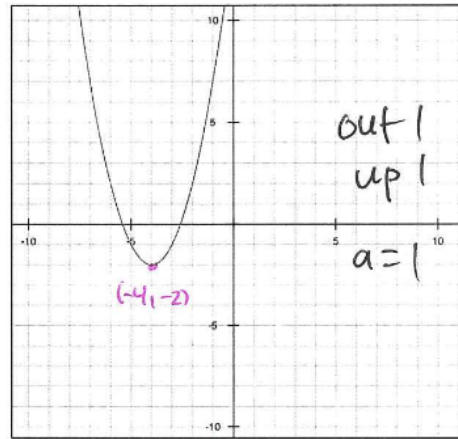
$$y = -\frac{5}{8}(x+1)^2 + 5$$

11-18. Write a quadratic equation that represents each graph below. in vertex form



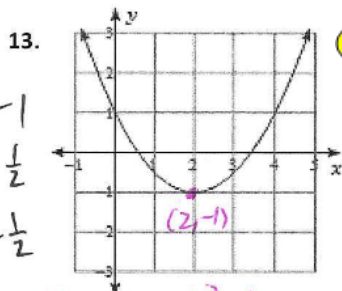
out ↓  
down ↓  
 $a = -1$

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



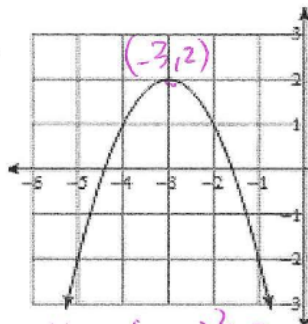
out ↑  
up ↑  
 $a = 1$

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



out ↑  
up  $\frac{1}{2}$   
 $a = \frac{1}{2}$

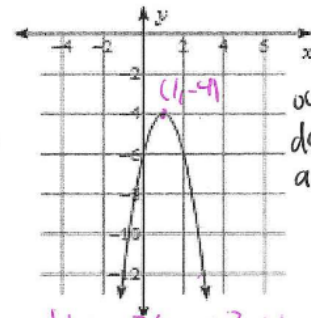
$$y = \frac{1}{2}(x-2)^2 - 1$$



out ↓  
down ↓  
 $a = -1$

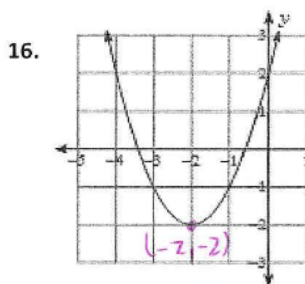
$$y = -(x+3)^2 + 2$$

15.



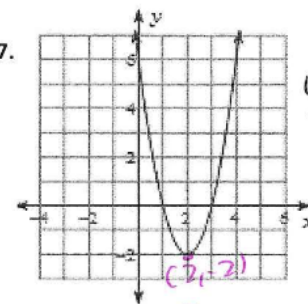
out ↓  
down ↓  
 $a = -2$

$$y = -2(x-1)^2 - 4$$



out ↑  
up ↑  
 $a = 1$

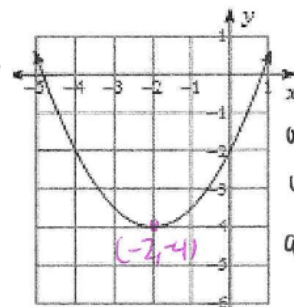
$$y = (x+2)^2 - 2$$



out ↑  
up ↑  
 $a = 2$

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

18.



out ↑  
up  $\frac{1}{2}$   
 $a = \frac{1}{2}$

$$y = \frac{1}{2}(x+2)^2 - 4$$

Week #10 Packet due tomorrow

All Ch 3 hw due Wed 11/13

Standard 3 Retakes due Fri 11/15

Do some together then finish as hw

Finding Key Features of Quadratics ws

Name: \_\_\_\_\_ Hr: \_\_\_\_\_

Find the vertex given an equation in standard form  $y = ax^2 + bx + c$  using  $\frac{-b}{2a}$ .

1.  $y = x^2 - 4x + 1$   
 $\frac{-(-4)}{2(1)} = 2$   
 $(2, -3)$

$a = 1$   
 $b = -4$   
 $c = 1$   
 $y = 2^2 - 4(2) + 1$   
 $4 - 8 + 1$

2.  $y = -5x^2 + 10x + 4$

Find the vertex given an equation in vertex form  $y = a(x-h)^2 + k$ .

3.  $y = 3(x-1)^2 + 2$   
 $(1, 2)$

4.  $y = -0.5(x+3)^2$   
 $(-3, 0)$

$y = (x-0)^2 - 5$   
 $(0, -5)$

Find the vertex given an equation in factored form  $y = (x-p)(x-q)$  using  $\frac{p+q}{2}$ .

6.  $y = (x-2)(x-6)$   
 $(-2)(-6)$   
 $(4, -4)$   
 $x-2=0 \rightarrow x=2$   
 $x-6=0 \rightarrow x=6$   
 $\frac{2+6}{2} = \frac{8}{2} = 4$

7.  $y = -2(x+3)(x+7)$

8.  $y = (x-3)(x+3)$

Find the vertex.

9.  $y = -x^2 + 6x + 8$

10.  $y = x^2 - 16$

11.  $y = (x-5)(x-3)$

12.  $y = (x+4)^2 + 5$

13.  $y = (x+5)(x-3)$

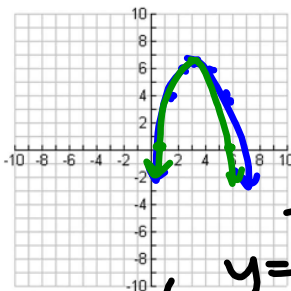
$y = 2(\frac{3}{4})^2 - 3(\frac{3}{4}) + 1$

14.  $y = 2x^2 - 3x + 1$

$\frac{-(-3)}{2(2)} = \frac{3}{4}$   
 $(\frac{3}{4}, -\frac{1}{8})$   
 $(.75, -0.125)$

Given the equations, find the parts and sketch a graph.

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



$\frac{-(-7)}{2(-1)} = -\frac{7}{2}$

$-(3.5)^2 + 7(3.5) - 6$

$-(x^2 - 7x + 6)$

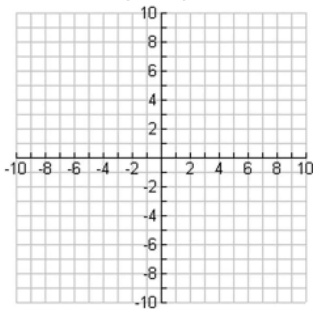
$y = -(x-1)(x-6)$

$x-1=0 \rightarrow x=1$   
 $x-6=0 \rightarrow x=6$

- A) Vertex  $(3.5, 6.25)$
- B) Vertex Form  $y = -(x-3.5)^2 + 6.25$
- C) Axis of Symmetry  $x = 3.5$
- D) Max/Min & its value  $\text{max } 6.25$
- E) y-intercept  $(0, -6)$
- F) x-intercept(s)  $(1, 0), (6, 0)$
- G) Domain  $\mathbb{R} (-\infty, \infty)$
- H) Range  $(-\infty, 6.25]$
- I) Find  $f(-1)$   $-14$

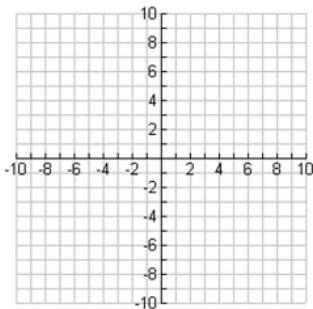
$-(-1)^2 + 7(-1) - 6$   
 $-1 - 7 - 6$

16.  $f(x) = -3(x+2)^2 - 4$



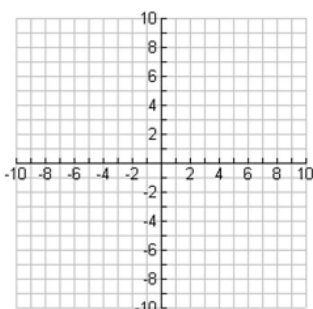
- A) Vertex \_\_\_\_\_
- B) Vertex Form \_\_\_\_\_
- C) Axis of Symmetry \_\_\_\_\_
- D) Max/Min & its value \_\_\_\_\_
- E) y-intercept \_\_\_\_\_
- F) x-intercept(s) \_\_\_\_\_
- G) Domain \_\_\_\_\_
- H) Range \_\_\_\_\_
- I) Find  $f(-3)$  \_\_\_\_\_

17.  $f(x) = -(x+1)(x-5)$



- A) Vertex \_\_\_\_\_
- B) Vertex Form \_\_\_\_\_
- C) Axis of Symmetry \_\_\_\_\_
- D) Max/Min & its value \_\_\_\_\_
- E) y-intercept \_\_\_\_\_
- F) x-intercept(s) \_\_\_\_\_
- G) Domain \_\_\_\_\_
- H) Range \_\_\_\_\_
- I) Find  $f(3)$  \_\_\_\_\_

18.  $f(x) = x^2 + 6x + 9$



- A) Vertex \_\_\_\_\_
- B) Vertex Form \_\_\_\_\_
- C) Axis of Symmetry \_\_\_\_\_
- D) Max/Min & its value \_\_\_\_\_
- E) y-intercept \_\_\_\_\_
- F) x-intercept(s) \_\_\_\_\_
- G) Domain \_\_\_\_\_
- H) Range \_\_\_\_\_
- I) Find  $f(-5)$  \_\_\_\_\_

