

**Homework** 1.12 Graph Vertex Form & Transformations of Quadratics

Answer the following questions as specific as possible.

1. What is the Standard Form of Quadratic Equation? \_\_\_\_\_

2. What is the Vertex Form of Quadratic Equation? \_\_\_\_\_

3. Using the Vertex Form of Quadratic Equation, what is the point of vertex? \_\_\_\_\_

Describe the transformations of the parent graph for each equation.

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

5.  $f(x) = -(x+9)^2 - 2$

6.  $f(x) = \frac{1}{2}(x-10)^2$

7.  $f(x) = -5x^2 + 2$

8.  $f(x) = \frac{2}{3}(x-8)^2$

9.  $f(x) = (x+1)^2 + 4$

Write the quadratic equation in vertex form that's performing the given transformations.

\_\_\_\_\_ 10. shifted to the right 4 and up 3

\_\_\_\_\_ 11. reflected over the x-axis and shifted left 11

\_\_\_\_\_ 12. moved down 17

\_\_\_\_\_ 13. reflected over the x-axis, shifted left 9 and down 8.

Answer the following questions as specific as possible.

1. What is the Standard Form of Quadratic Equation?  $y = ax^2 + bx + c$

2. What is the Vertex Form of Quadratic Equation?  $y = a(x - h)^2 + k$

3. Using the Vertex Form of Quadratic Equation, what is the point of vertex?  $(h, k)$

Describe the transformations of the parent graph for each equation.

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

- up 5

5.  $f(x) = -(x + 9)^2 - 2$

- reflect across x-axis  
- left 9  
- down 2

6.  $f(x) = \frac{1}{2}(x - 10)^2$

- shrink 1/2  
- right 10

7.  $f(x) = -5x^2 + 2$

- reflect across x-axis  
- stretch 5  
- up 2

8.  $f(x) = \frac{2}{3}(x - 8)^2$

- shrink  $\frac{2}{3}$   
- right 8

9.  $f(x) = (x + 1)^2 + 4$

- left 1  
- up 4

Write the quadratic equation in vertex form that's performing the given transformations.

$y = (x - 4)^2 + 3$     10. shifted to the right 4 and up 3

$y = -(x + 11)^2$     11. reflected over the x-axis and shifted left 11

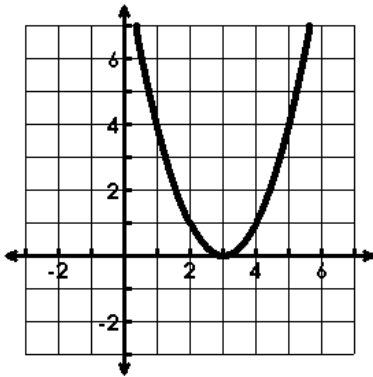
$y = x^2 - 17$     12. moved down 17

$y = -(x + 9)^2 - 8$     13. reflected over the x-axis, shifted left 9 and down 8.

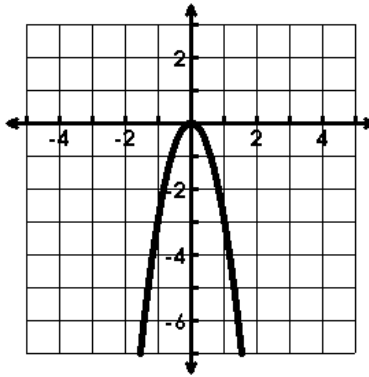
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Using the respective graph's, describe the transformations and write an quadratic equation in vertex form.

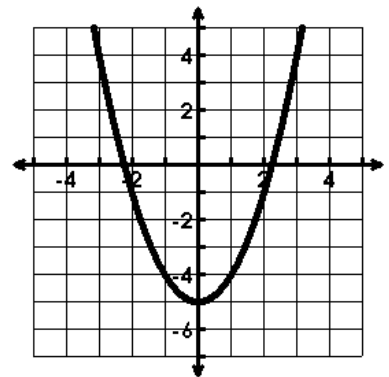
1. Equation: \_\_\_\_\_  
Transformations:



2. Equation: \_\_\_\_\_  
Transformations:

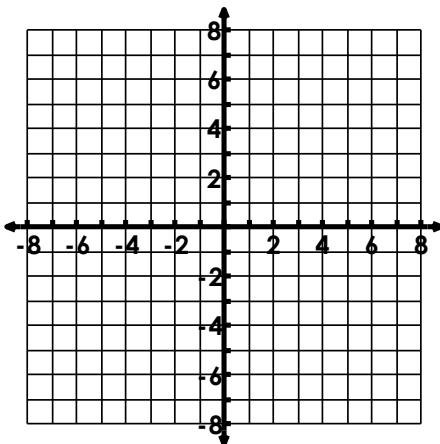


3. Equation: \_\_\_\_\_  
Transformations:

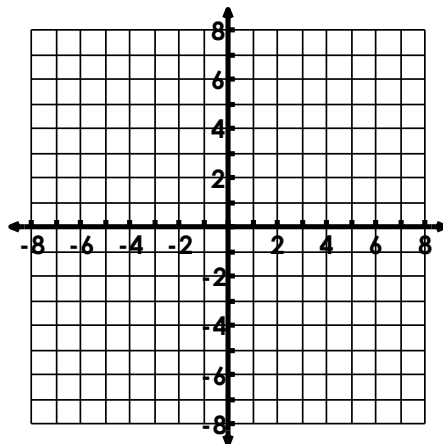


Sketch the following equations Identify the **vertex** and the **axis of symmetry**.

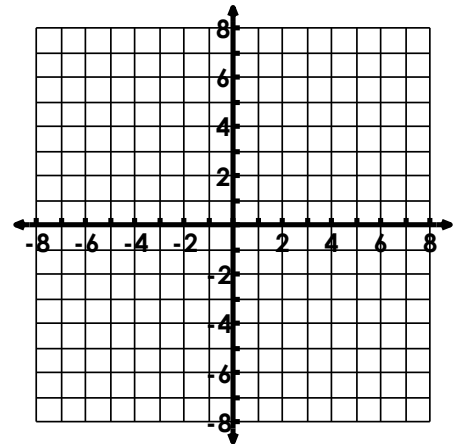
4.  $f(x) = 2(x - 1)^2$



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



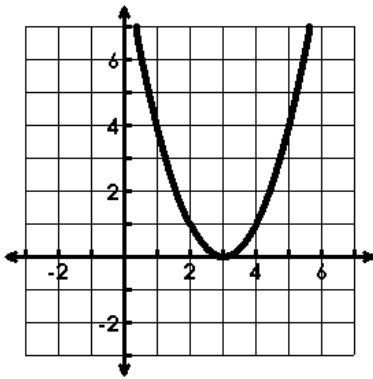
6.  $f(x) = -3(x + 1)^2 - 3$



Using the respective graph's, describe the transformations and write an quadratic equation in vertex form.

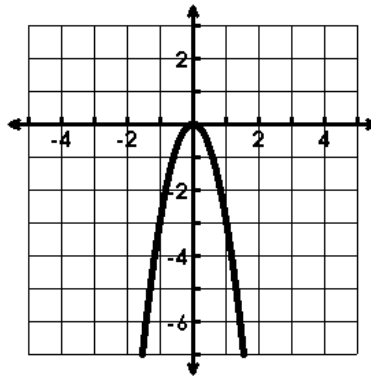
1. Equation:  $y = (x - 3)^2$   
Transformations:

- right 3



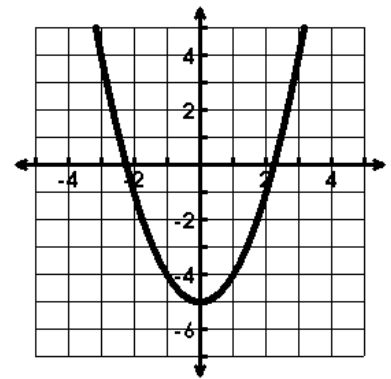
2. Equation:  $y = -3x^2$   
Transformations:

- reflection across x-axis  
- stretch 3



3. Equation:  $y = x^2 - 5$   
Transformations:

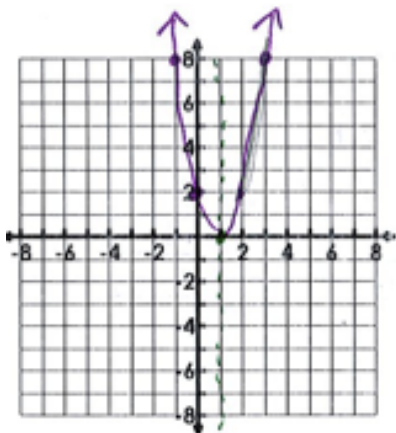
- down 5



Sketch the following equations. In addition, identify the **vertex** and the **axis of symmetry**.

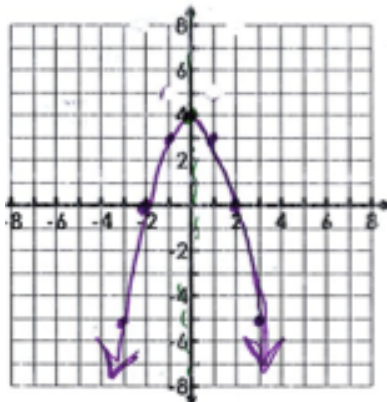
4.  $f(x) = 2(x - 1)^2$

Vertex: (1, 0)  
AOS:  $x = 1$



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

Vertex: (0, 4)  
AOS:  $x = 0$



6.  $f(x) = -3(x + 1)^2 - 3$

Vertex: (-1, -3)  
AOS:  $x = -1$

