

**4-7: Transformations of Quadratic Graphs (Practice)**

Write each equation in vertex form. Then identify the vertex, axis of symmetry, and direction of opening.

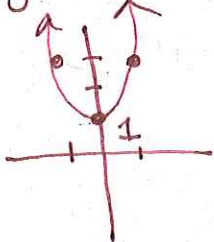
1.  $y = -6x^2 - 24x - 25$

$-6x^2 - 24x = 25$   
 $-6(x^2 + 4x + \underline{4}) = 25 + \underline{-24}$   
 $-6(x+2)^2 = 1$

$y = -6(x+2)^2 - 1$   
 vertex =  $(-2, -1)$  opens down  
 axis of sym:  $x = -2$

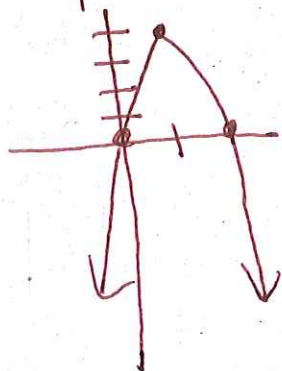
2.  $y = 2x^2 + 2$   $2x^2$

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



3.  $y = -4x^2 + 8x$

$-4x^2 + 8x = 0$   
 $-4(x^2 - 2x + \underline{1}) = 0 + \underline{-4}$   
 $-4(x-1)^2 + 4 = y$   
 vertex  $(1, 4)$   
 opens down



4.  $y = 2x^2 + 12x + 18$

$2(x^2 + 6x + \underline{9}) = 18 + \underline{18}$

$2(x+3)^2 = 0$

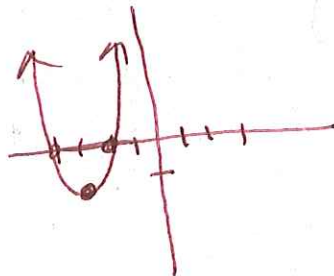
$y = 2(x+3)^2$  opens up  
 vertex  $(-3, 0)$

a.o.s.  $x = -3$

Graph each function.

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

vertex  $(-3, -1)$



6.  $y = -x^2 + 6x - 5 \rightarrow -1(x^2 - 6x + 9) = 5 + \underline{-9}$   
 $= -4$

$y = -1(x+3)^2 + 4$   
 vertex  $(-3, 4)$   
 opens down

