Key

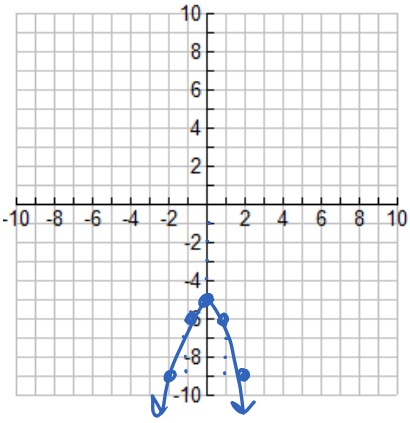
Unit 8 - Day 7 Notes

Graphing Quadratics - Vertex Form

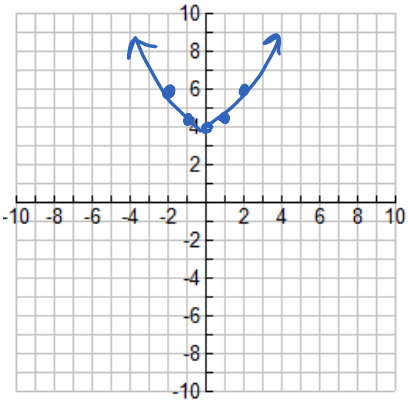
Warm it Up!

Describe the transformations being performed on the quadratic parent function. Then, graph the function.

1) $y = -x^2 - 5$ reflected over x-axis down 5



2) $y = \frac{1}{2}x^2 + 4$ vertical shrink b.a.f.o ½ up 4



x	y
-2	6
-1	4.5
0	4
1	4.5
2	6

(#1-3) Identify the transformations on the quadratic parent function. Be specific about the order!

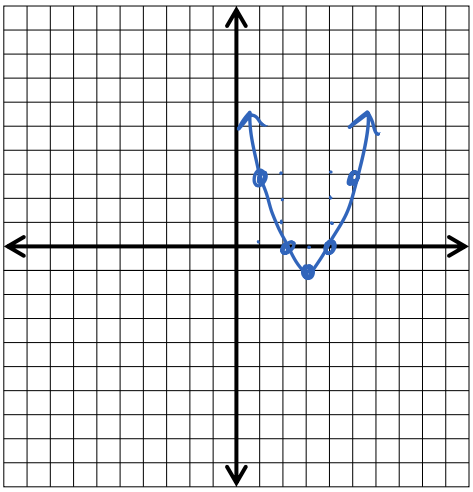
1. $y = (x+7)^2 - 1$
   Left 7
   down 1

2. $y = 3(x-4)^2 + 6$
   right 4
   vertical stretch b.a.f.o 3
   up 6

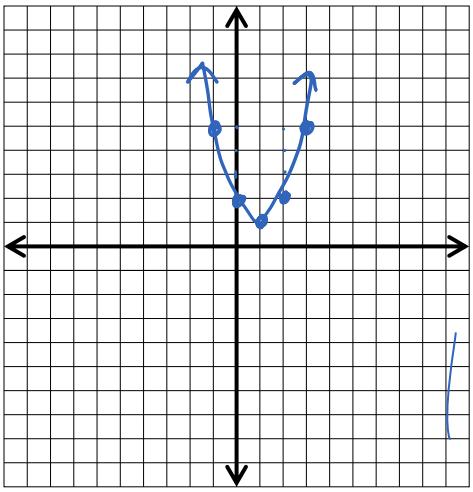
3. $y = -2(x+5)^2$
   left 5
   vertical stretch b.a.f.o. 2
   reflect over x-axis

(#4-7) Identify the transformations taking place. Then, graph the following quadratic equations with at least five accurate points.

4. $y = (x-3)^2 - 1$ right 3 down 1



5. $y = (x-1)^2 + 1$ right one up one



Vertex Form:

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

Pattern: if $a \neq 1$ or -1 (1, 3, 5)

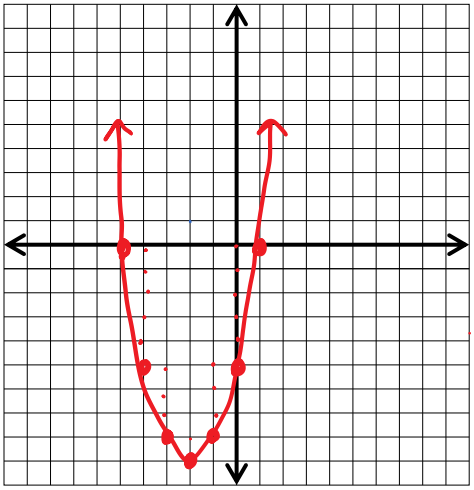
Vertex: (h, k)

Axis of Symmetry: $x = h$

a: + ⇒ graph opens up ∪
− ⇒ graph opens down ∩

6. $y = 1(x+2)^2 - 9$

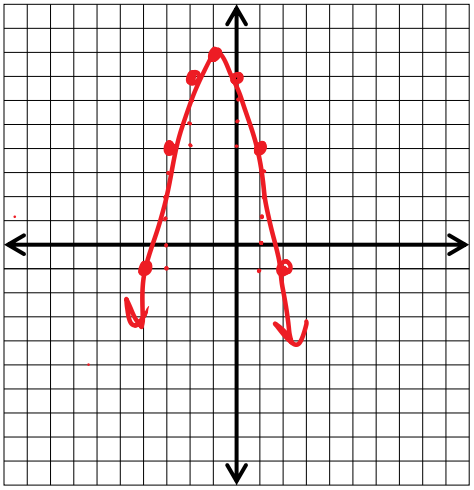
Left 2
down 9



vertex (-2,-9)
a=1, so
(1,3,5)
pattern

7. $y = -(x+1)^2 + 8$

Left 1
reflect over x-axis
up 8

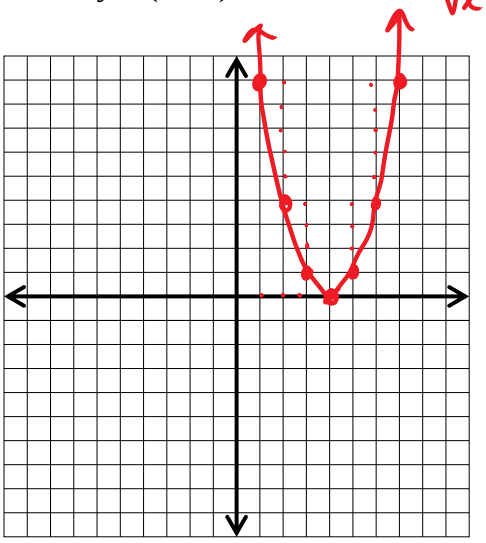


vertex (-1,8)
a=-1
so
(-1,-3,-5)

Partner Practice:

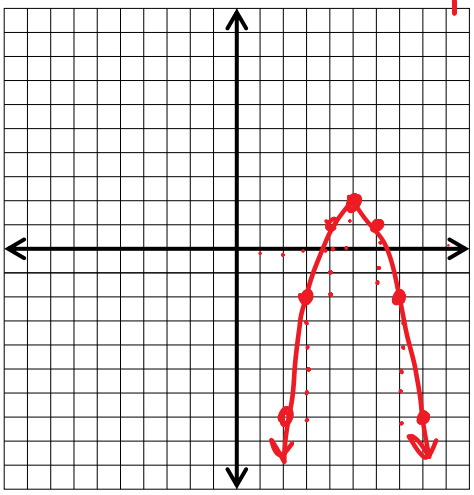
8. $y = (x-4)^2$

vertex (4,0)
opens up
1,3,5



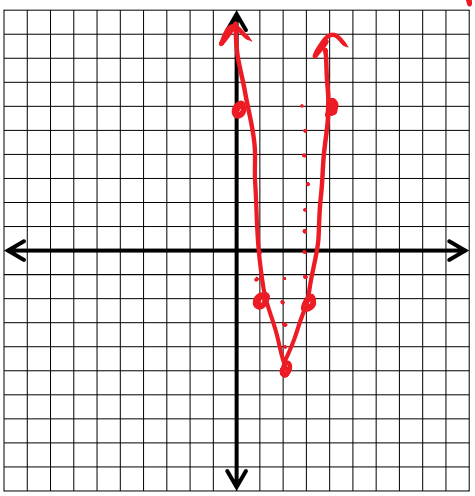
9. $y = -(x-6)^2 + 2$

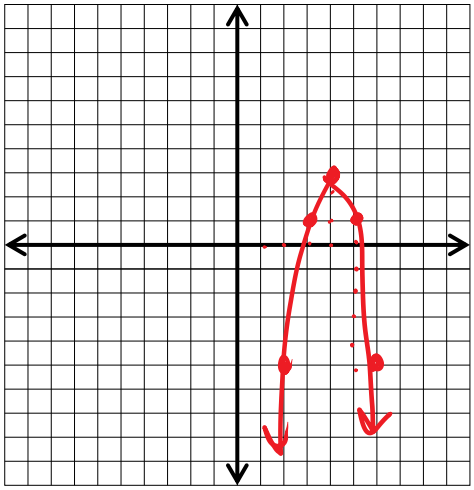
vertex (6,2)
opens down
-1,-3,-5



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

(2,-5)
opens up
3(1,3,5)
3,9,15



11. $y = -2(x-4)^2 + 3$

(4,3)
opens down
-2(1,3,5)
-2,-6,-10