

Day 2: Graphing Quadratic Inequalities

Date _____

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- 1) Now that we are professionals at graphing quadratics from any three forms, we are ready to graph quadratic INEQUALITIES!!

We start off the exact same way. Find the key features (dependent on what form the equation is given) and graph the parabola.

$$3 < x$$

Next we look at the inequality to determine whether to make the line dashed or solid.

Dashed if $<$, $>$ (Strictly Less than or greater than)

Solid if \leq , \geq

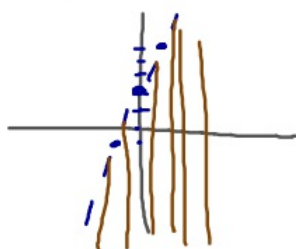
Finally we determine where to shade the graph.

If $y >$ or $y \geq$, shade ABOVE the vertex

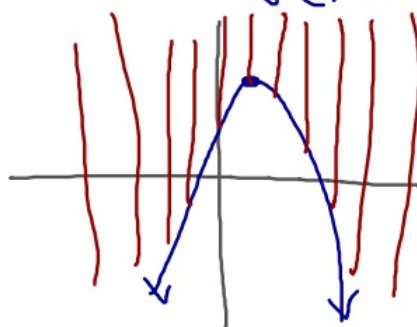
If $y <$ or $y \leq$, shade BELOW the vertex

Let's draw some pictures:

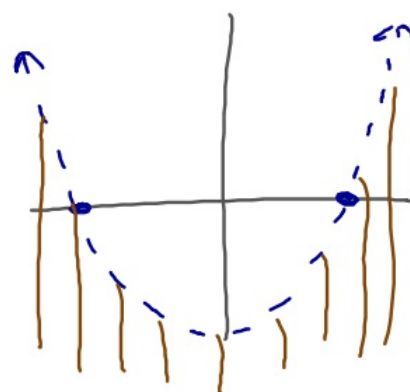
1) $y < 3x + 2$



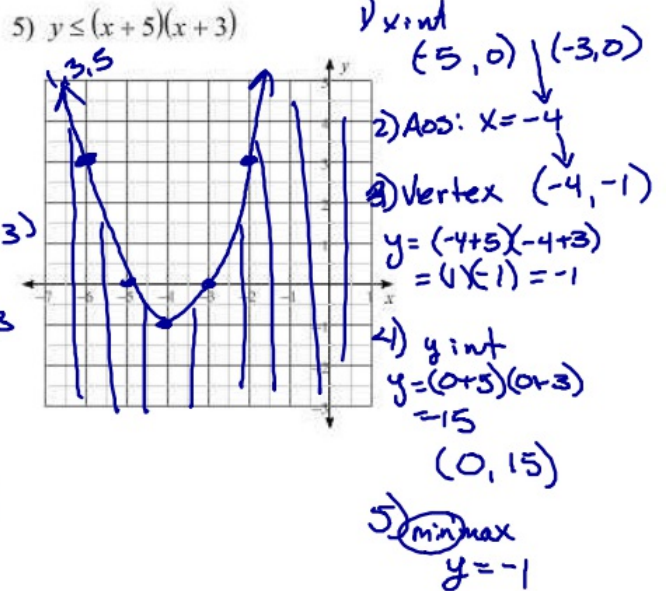
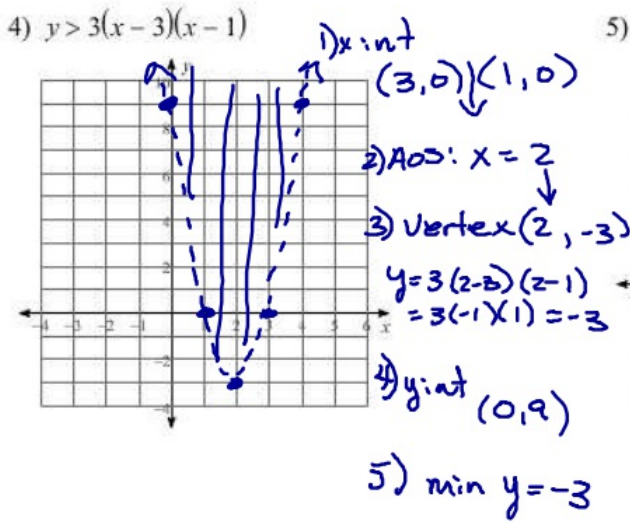
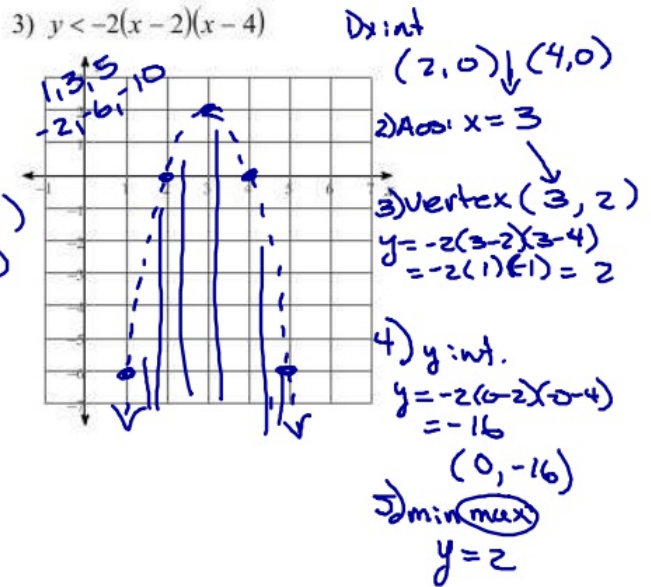
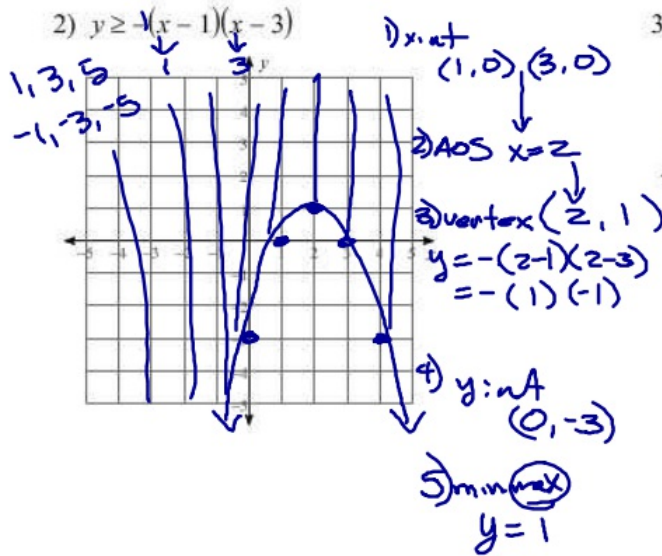
2) $y \geq -2(x-1)^2 + 4$
Vertex: (1, 4)

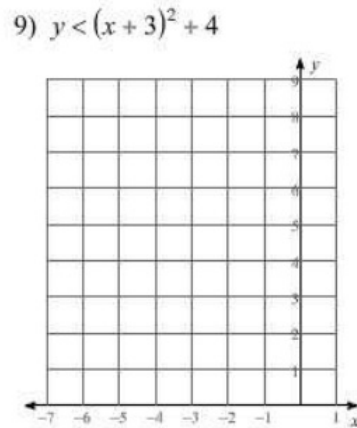
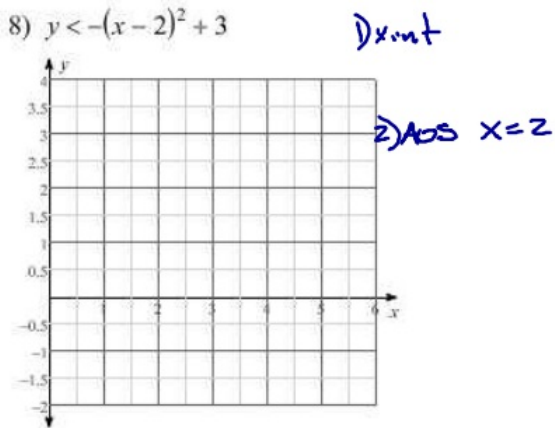
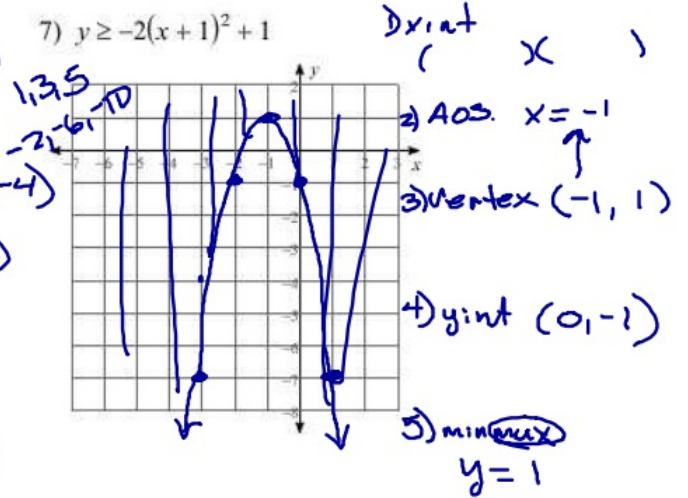
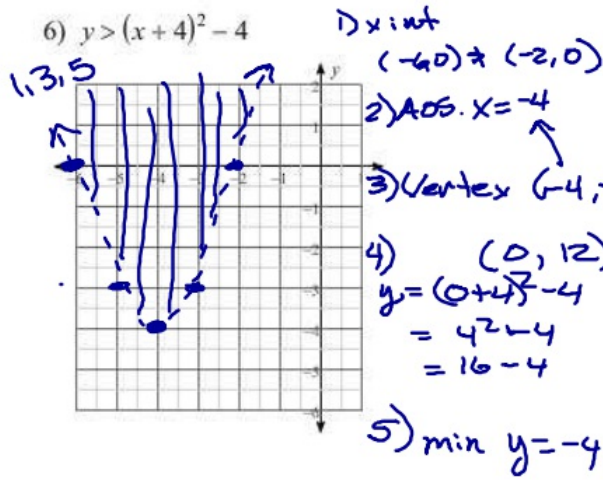


3) $y < (x-5)(x+6)$



Sketch the graph of each quadratic inequality. List all key features.

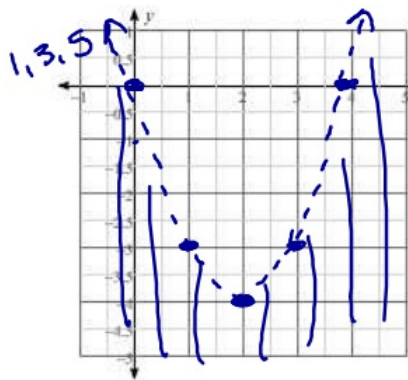




$$y < x(x-4)$$

or

10) $y < x^2 - 4x + 0$



1) x int
(0, 0) (4, 0)

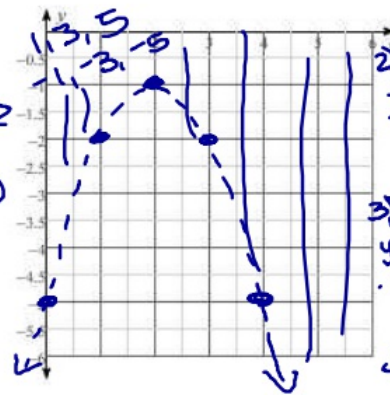
2) Abs. $x = 2$
 $\frac{-b}{2a} = \frac{-(-4)}{2(1)} = \frac{4}{2} = 2$

3) Vertex (2, -4)
 $y = (2)^2 - 4(2)$
 $= 4 - 8 = -4$

4) y int
(0, 0)

5) min $y = -4$

11) $y > -x^2 + 4x - 5$



1) x int
Imaginary

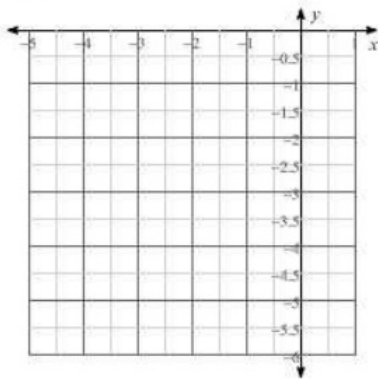
2) Abs.
 $\frac{-b}{2a} = \frac{-4}{2(-1)} = \frac{-4}{-2} = 2$
 $x = 2$

3) Vertex (2, -1)
 $y = -(2)^2 + 4(2) - 5$
 $= -4 + 8 - 5$
 $= -1$

4) y int (0, -5)
from graphing.

5) max
 $y = -1$

12) $y \leq -x^2 - 4x - 5$



13) $y \leq 3x^2 + 24x + 49$

