

To graph the solution to a two-variable quadratic inequality:

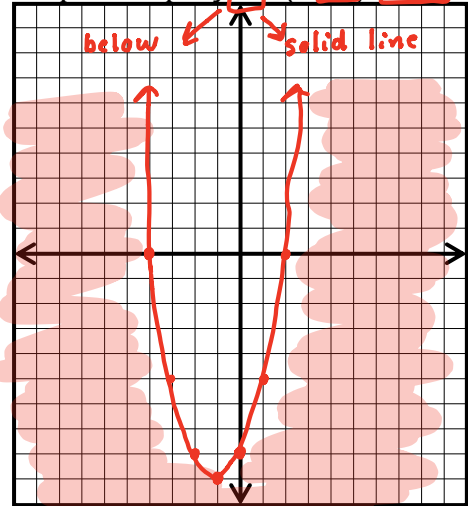
- Graph the boundary using the quadratic function. Determine if it should be solid or dotted.

$\leq$ or $\geq$	Solid Line
$<$ or $>$	Dotted Line

- Test a point in each region.
- Shade the region of the point that forms a true inequality.

$\leq$ or $<$	shaded below	Opens Up	outside
$\geq$ or $>$	shaded above	Opens Down	inside

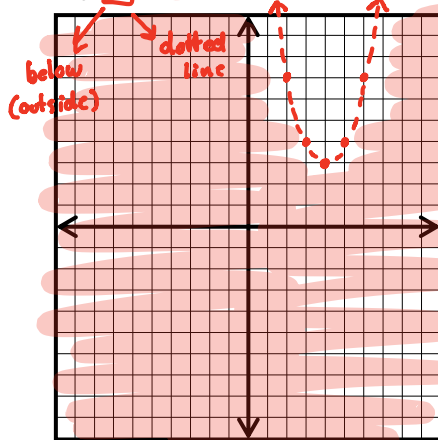
Vertex form:  $y \leq 2(x+1)^2 - 18$  Vertex:  $(-1, -18)$   
 changes sign



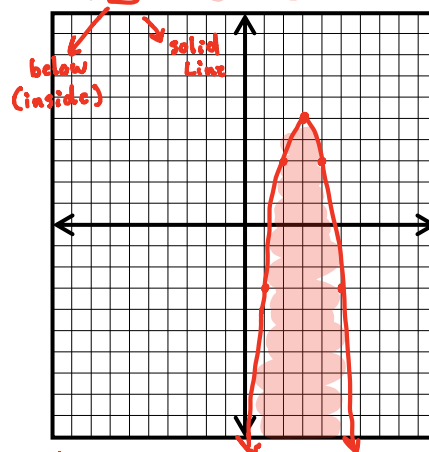
**PRACTICE PROBLEMS**

Graph the solution to each inequality.

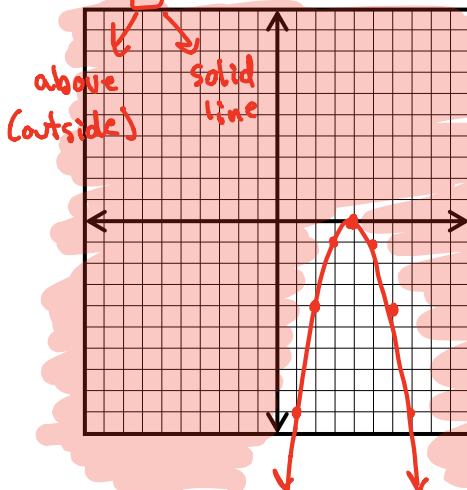
1)  $y < (x-4)^2 + 3$  Vertex:  $(4, 3)$



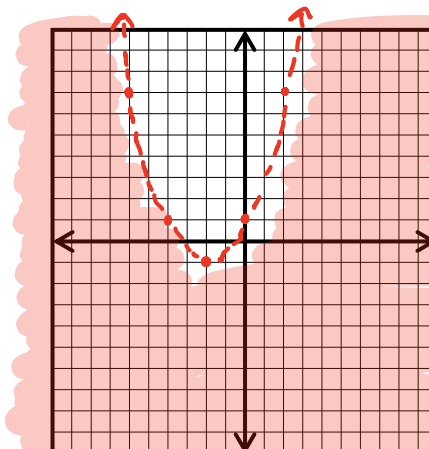
2)  $y \leq -2(x-3)^2 + 5$  Vertex:  $(3, 5)$



3)  $y \geq -(x-4)^2$  Vertex:  $(4, 0)$



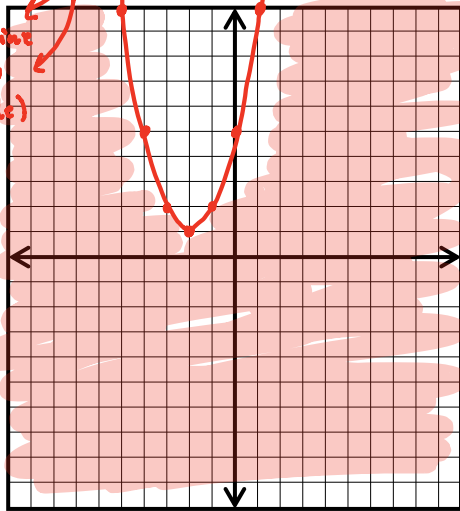
4)  $y < \frac{1}{2}(x+2)^2 - 1$  Vertex:  $(-2, -1)$



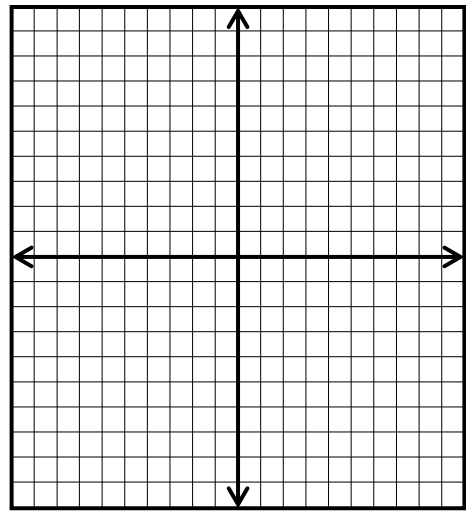
Unit 2B Day 5 CW  $a=1$   
 $b=4$   $x = \frac{-b}{2a} = \frac{-4}{2(1)} = \frac{-4}{2} = -2$

Standard form 1.  $y \leq x^2 + 3x + 4$

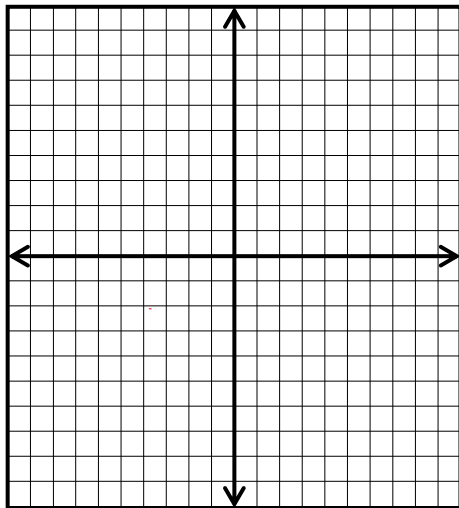
solid line below (outside)



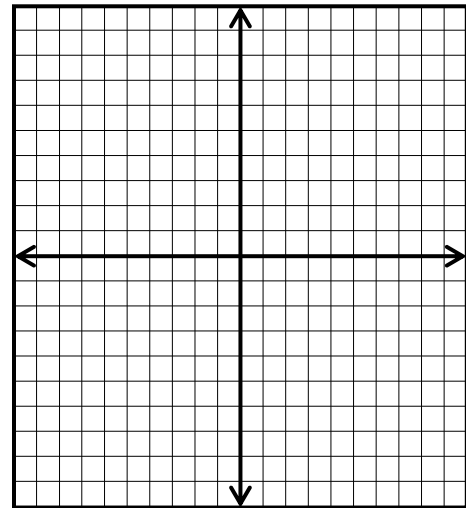
2.  $y > x^2 + 4x + 4$



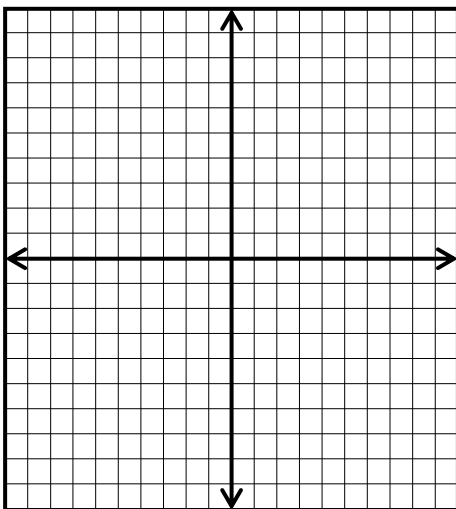
3.  $y \geq x^2 - 8x + 12$



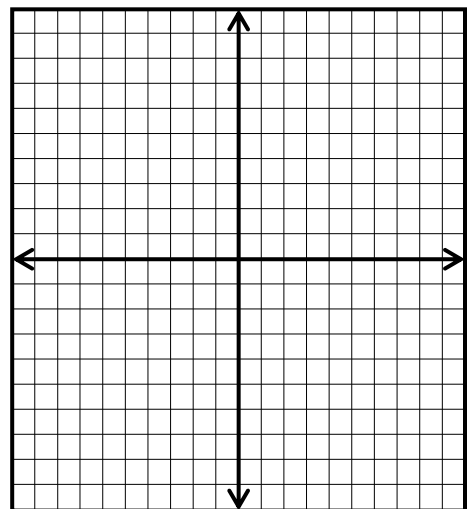
4.  $y < x^2 - 9$



5.  $y \leq -2x^2 + 12x - 15$



6.  $y > -x^2 + 4$



# Unit 2B Day 5 HW

## Quadratic Inequalities

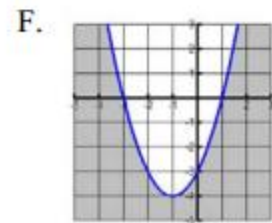
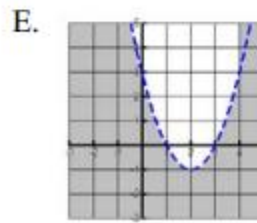
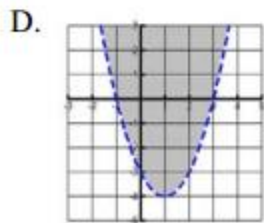
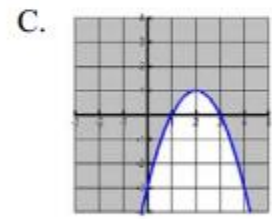
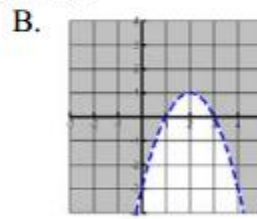
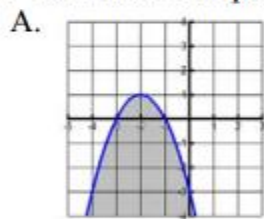
#1-3 Determine whether the ordered pair is a solution of the inequality. Show your work then answer yes or no.

1.  $y < x^2 - 2x + 4$ , (1,2)      2.  $y > 2x^2 + x - 5$ , (-2,1)      3.  $y \leq -2x^2 + 5x + 6$ , (4,-4)

#4-9 Match the inequality with its graph.

- \_\_\_\_\_ 4.  $y \geq -x^2 + 4x - 3$       \_\_\_\_\_ 5.  $y \leq -x^2 - 4x - 3$       \_\_\_\_\_ 6.  $y \leq x^2 + 2x - 3$   
 \_\_\_\_\_ 7.  $y < x^2 - 4x + 3$       \_\_\_\_\_ 8.  $y > -x^2 + 4x - 3$       \_\_\_\_\_ 9.  $y > x^2 - 2x - 3$

Use A-F to match with quadratic inequalities #4-9.



#13-15 Graph each quadratic inequality.

13.  $y \leq x^2 - 6x + 8$

14.  $y \leq -x^2 + 6x - 7$

15.  $y > 2x^2 - 4x - 6$

