

Day 8: QUADRATIC INEQUALITIES

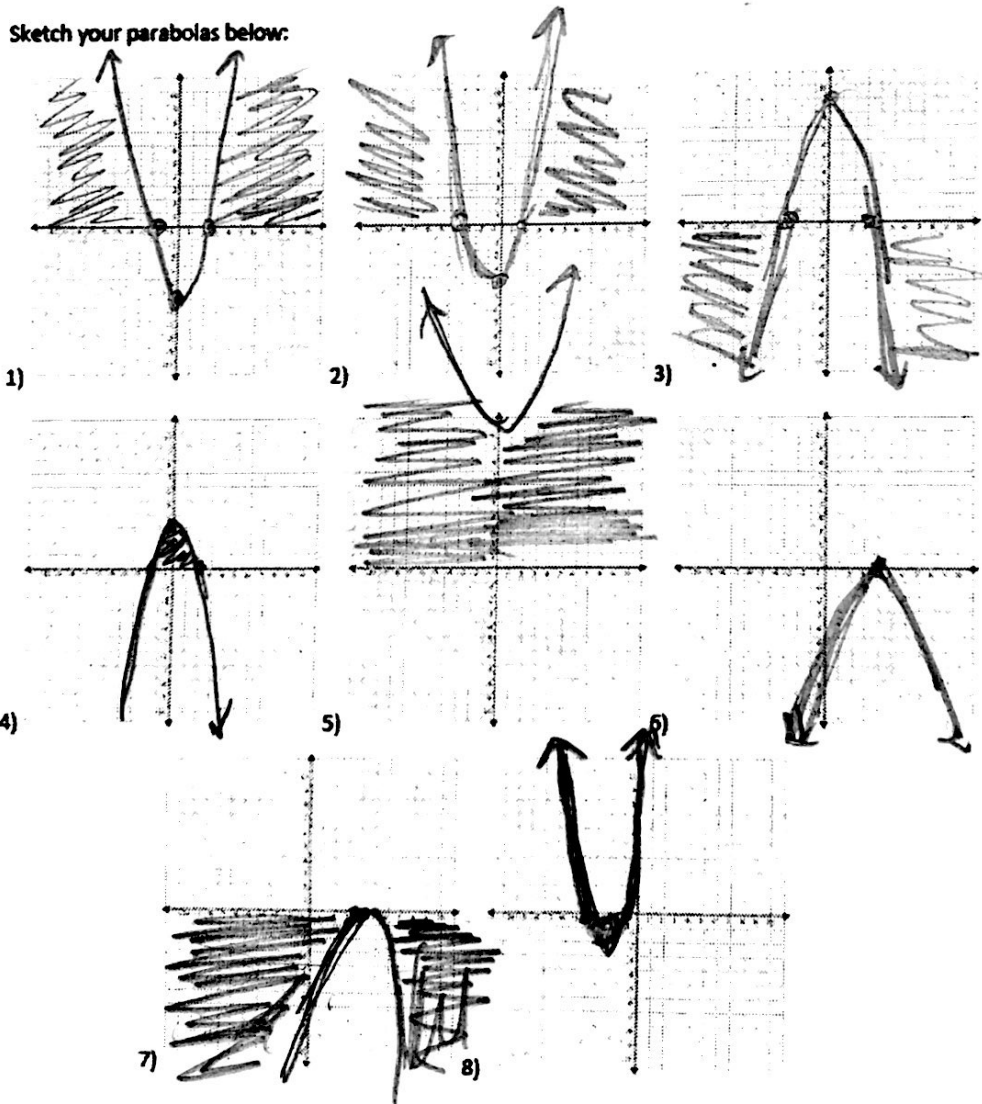
Directions: Sketch each inequality on the left. Then, examine the graph to determine the solution. Match the inequality to its solution on the right.

involved, and label

1. $y \leq x^2 - 4$ *e*
2. $y < 2x^2 - 5x - 12$
3. $y > -x^2 + 9$
4. $y \leq -x^2 + 4$ *d*
5. $y < 3x^2 + x + 12$
6. $y < -(x-4)^2$
7. $y \geq -x^2 + 6x - 9$
8. $y \geq 2x^2 + 11x + 12$ *b*

- a. *no solution*
- b. $x = 3$
- c. $x > -3$ and $x < 3$
- d. $x \geq -2$ and $x \leq 2$
- e. $x \leq -2$ or $x \geq 2$
- f. $x < 4$ and $x > -\frac{9}{2}$
- g. $x < 4$ or $x > 4$
- h. $x \geq -\frac{3}{2}$ or $x \leq -4$

Sketch your parabolas below:



Day 8

① $0 \leq x^2 - 4$
 $(x+2)(x-2)$

$x < -2$ OR $x > 2$

② $0 < 2x^2 - 5x - 12$

-5	-24
-8+3	-8·3

$2x^2 - 8x + 3x - 12$

$2x(x-4) + 3(x-4)$

$(2x+3)(x-4)$

$x = -3/2, 4$

$x < 3/2$ OR $x > 4$

③ $0 > -x^2 + 9$

$-(x^2 - 9)$

$-(x+3)(x-3)$

$x = 3, -3$

$x < -3$ OR $x > 3$

$$4) 0 \leq -x^2 + 4$$

$$-(x^2 - 4)$$

$$-(x+2)(x-2)$$

$$\boxed{x > -2 \text{ AND } x \leq 2}$$

$$5) 0 < 3x^2 + x + 12$$

$$\frac{1}{36}$$

all real ~~is~~

$$6) 0 < -(x-4)^2$$

$$x=4$$

No solution

function is
never greater
than zero.

$$\begin{aligned}
 (7) \quad 0 &\geq -x^2 + 6x - 9 \\
 &= -(x^2 - 6x + 9) \\
 &= -(x-3)(x-3) \\
 & \quad x = 3
 \end{aligned}$$

all real ~~is~~

$$(8) \quad 0 \geq 2x^2 + 11x + 12$$

11	24
8+3	8.3

$$\begin{aligned}
 &2x^2 + 8x + 3x + 12 \\
 &2x(x+4) + 3(x+4)
 \end{aligned}$$

$$\begin{aligned}
 &(2x+3)(x+4) \\
 &x = -3/2, -4
 \end{aligned}$$

$$x \geq -3/2 \text{ AND } x \leq -4$$