

1.8 Quadratic Inequalities

Unit 1
Day 15

Review: Linear Inequalities

I. "Solve" $-3x+6 \geq 0$

change sign if
mult or divide
by negative

algebra:

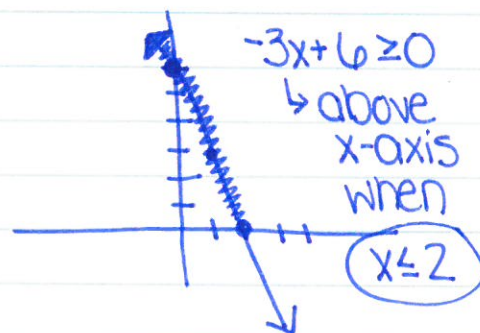
$$-3x+6 \geq 0$$

$$-3x \geq -6$$

$$\div -3 \quad \div -3$$

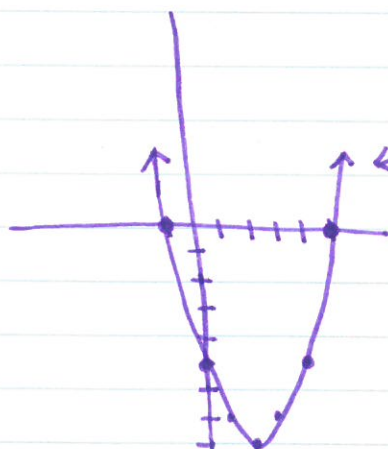
$$x \leq 2$$

graph: $y = -3x+6$



New: Quadratic Inequalities... let's focus on graphing!

II. "Solve" $x^2-4x-5 \geq 0$



this is ≥ 0 when the graph
is above the x-axis

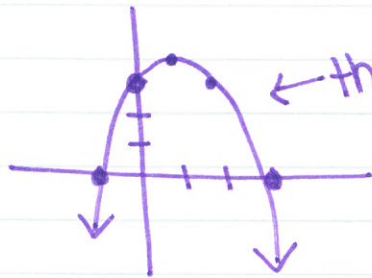
$$x \geq 5 \text{ or } x \leq -1$$

$$\text{or } (-\infty, -1] \cup [5, \infty)$$

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Solve $-x^2 + 2x + 3 > 0$

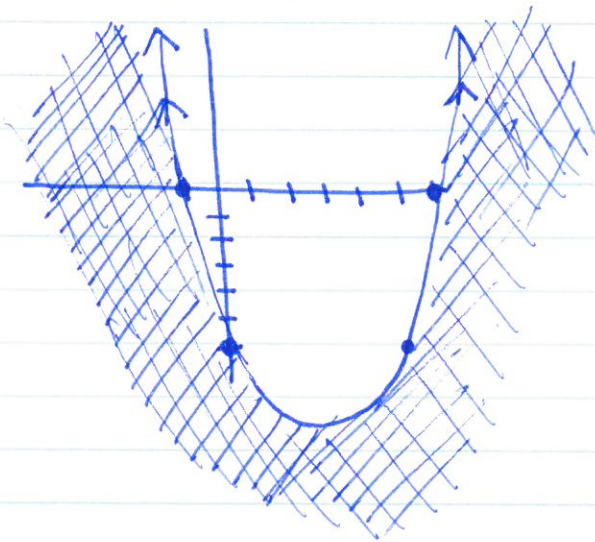


← this is > 0 when the graph is above the x-axis.

$$-1 < x < 3$$

or $(-1, 3)$

III. Graph $y \leq x^2 + 5x - 6$



1. Graph $y = x^2 + 5x - 6$

2. Solid line if \geq or \leq
Dotted line if $>$ or $<$

3. Test a point... I like $(0, 0)$...

Is it true

$$0 \leq 0^2 + 5 \cdot 0 - 6?$$

No.

So shade where $(0, 0)$ is not.

*Calculator can also graph these!!

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Graph: $y > x^2 - 4$



test $(0,0)$... $0 > 0 - 4$
 $0 > -4$
true... so
shade where
 $(0,0)$ is

IV. Solving Systems of Inequalities

- Graph both (or all)... all points in the overlap are solutions... we write our answer as a graph ☺

"Solve" $y > (x-2)^2$
 $y \leq -\frac{1}{2}x^2 + \frac{1}{2}x + 4$

Every
Point in
the Intersection
is a solution.

