

Section 4.8 Notes Day 2

Objectives: Solve Quadratic Inequalities.

Quadratic Inequalities in one variable can be solved using the graphs of the related quadratic functions.

$ax^2 + bx + c < 0$

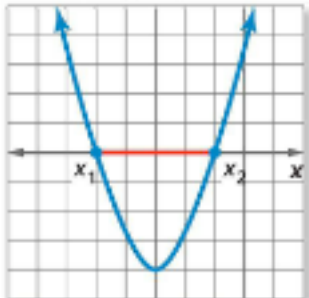
Graph $y = ax^2 + bx + c$ and identify the x -values for which the graph lies **below** the x -axis.

For \leq include the x -intercepts in the solution.

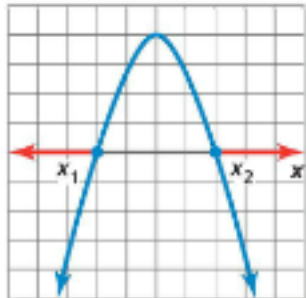
$ax^2 + bx + c > 0$

Graph $y = ax^2 + bx + c$ and identify the x -values for which the graph lies **above** the x -axis.

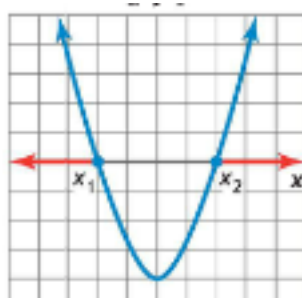
For \geq include the x -intercepts in the solution.



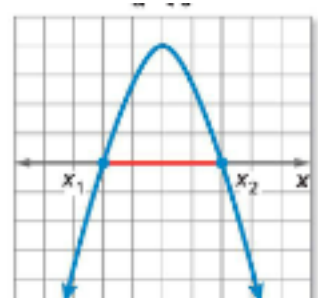
$\{x \mid x_1 < x < x_2\}$



$\{x \mid x < x_1 \text{ or } x > x_2\}$



$\{x \mid x < x_1 \text{ or } x > x_2\}$



$\{x \mid x_1 < x < x_2\}$

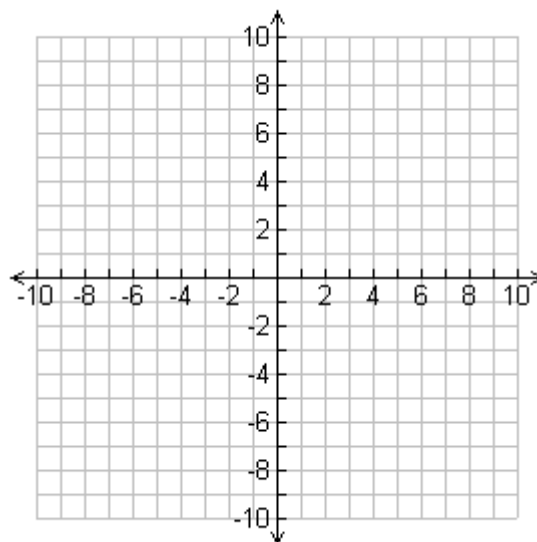
EX. Solve $x^2 + 2x - 8 < 0$ by graphing.

The solution consists of the x -values for which the graph of the related function lies **below** the x -axis.

Begin by finding the roots of the related function.

$x^2 + 2x - 8 = 0$

Sketch the graph of a parabola that has x -intercepts at ____ and ____.
The graph should open ____.

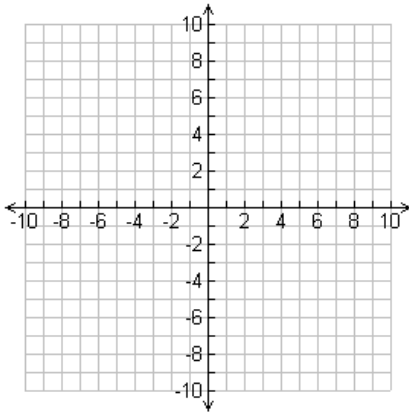


The graph lies below the x -axis _____ $x =$ _____ and $x =$ _____.

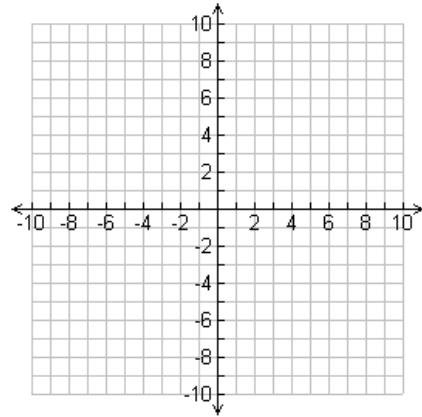
Thus, the solution set is _____

Solve each inequality by graphing.

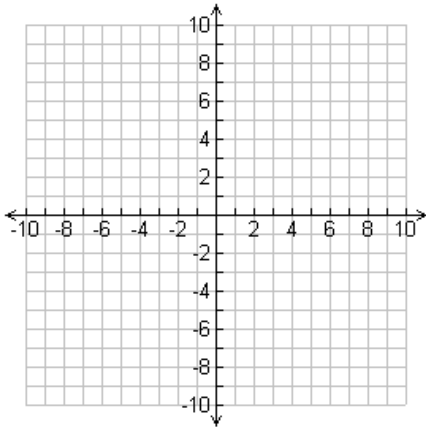
1) $-x^2 + 3x + 10 \leq 0$



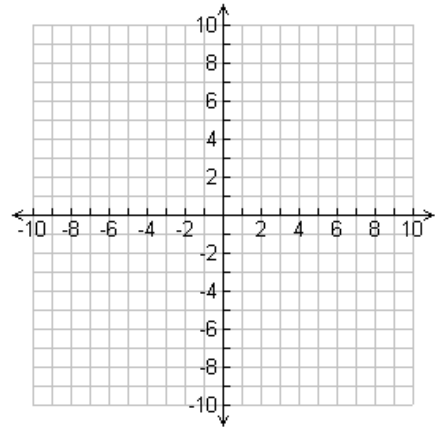
2) $0 > x^2 + 5x - 6$



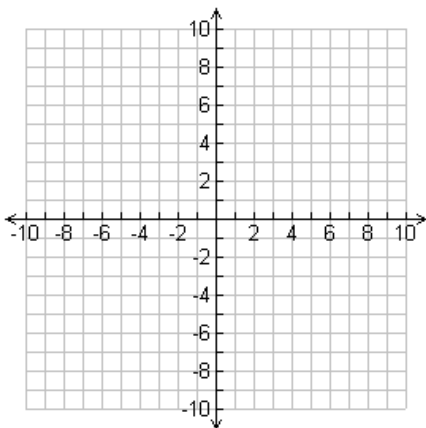
3) $x^2 - 3x \leq 18$



4) $x^2 + 11x \geq -30$



5) $x^2 + 5x < -6$



6) $x^2 - 2x - 24 > 0$

