Solving a System of Quadratic Inequalities by Graphing

Name _____

Date _____ Period _____

Standard form of a quadratic

$$y = ax^2 + bx + c$$

$y > ax^2 + bx + c$ $\quad$ $y < ax^2 + bx + c$

$y \geq ax^2 + bx + c$ $\quad$ $y \leq ax^2 + bx + c$

Quadratic Inequality

$y > a(x - h)^2 + k$ $\quad$ $y \leq a(x - p)(x - q)$

Rules for graphing quadratic inequalities...

Graph the boundary parabola $y = ax^2 + bx + c$

Solid line or dotted line

$y <$ *or* $y >$ $\Rightarrow$ dotted line

$y \leq$ *or* $y \geq$ $\Rightarrow$ solid line

Shade above or below parabola

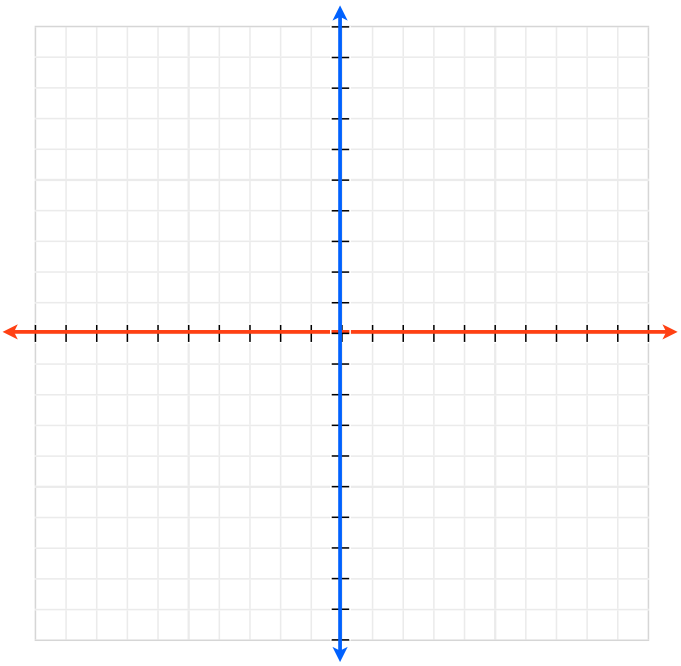
$y >$ *or* $y \geq$ $\Rightarrow$ shade above parabola

$y <$ *or* $y \leq$ $\Rightarrow$ shade below parabola

The shaded region represents all (x,y) coordinates that will make the inequality a true statement.

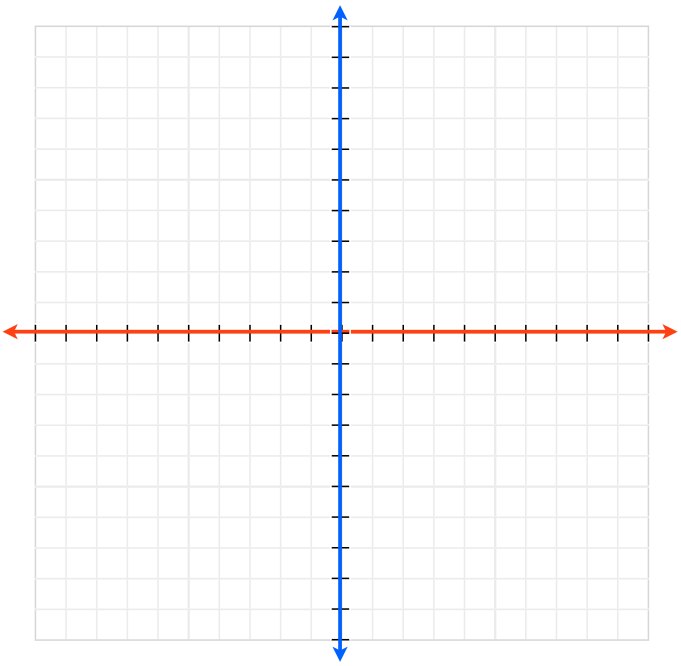
Solve the following system

$y > x^2 - 4x - 4$ $\quad\quad$ $y < -x^2 + 4x + 4$



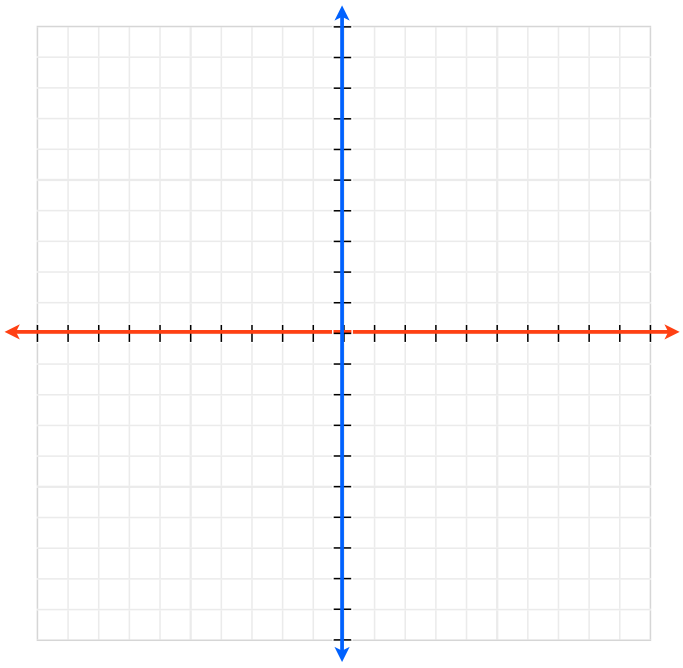
Solve the following system

$y \leq -2x^2 - 8x - 6$ $\quad\quad$ $y \geq x^2 + 2x - 4$



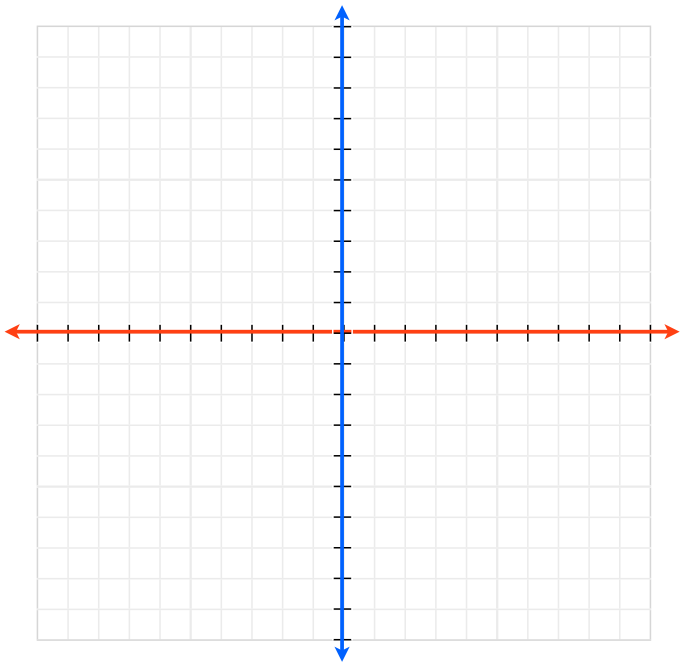
Solve the following system

$y \geq -(x-4)^2 + 1$ $\quad$ $y \leq 2(x+5)^2 - 3$



Solve the following system

$y > (x-5)(x+1)$ $\quad$ $y < (x-3)(x-1)$



Rules for graphing quadratic inequalities...

$y > ax^2 + bx + c$ $\quad$ $y < ax^2 + bx + c$

$y \geq ax^2 + bx + c$ $\quad$ $y \leq ax^2 + bx + c$

Graph the boundary parabola $y = ax^2 + bx + c$

Solid line or dotted line

$y <$ *or* $y >$ $\Rightarrow$ dotted line

$y \leq$ *or* $y \geq$ $\Rightarrow$ solid line

Shade above or below parabola

$y >$ *or* $y \geq$ $\Rightarrow$ shade above parabola

$y <$ *or* $y \leq$ $\Rightarrow$ shade below parabola

Vertex Form

$y > a(x - h)^2 + k$

Intercept Form

$y \leq a(x - p)(x - q)$