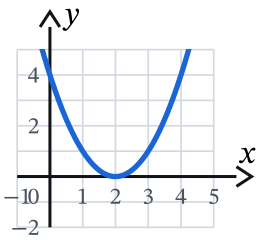
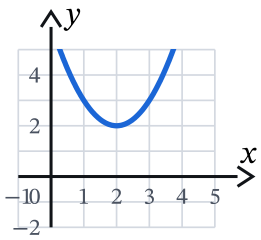
Name _____ Date _____

Quadratic Inequalities: All Cases

Example



$x^2 - 4x + 4 = (x-2)^2$, $D = 0$



$x^2 - 4x + 6$, $D < 0$

	> 0	≥ 0	< 0	≤ 0
$(x-2)^2$	$x \in \mathbb{R} \setminus \{2\}$	$x \in \mathbb{R}$	no solution	$x = 2$
$x^2 - 4x + 6$	$x \in \mathbb{R}$	$x \in \mathbb{R}$	no solution	no solution

Remember

If the parabola only **touches** the x-axis ($D = 0$) or **does not cross it at all** ($D < 0$), the solution is all of $\mathbb{R}$, $\mathbb{R}$ without one point, a single point, or no solution. Always sketch first!

1 ON YOUR OWN Solve the inequalities. For each, first find D and sketch the parabola in the margin.

$x^2 - 6x + 9 > 0$: _____

$x^2 + 2x + 5 < 0$: _____

$-x^2 + 2x - 1 \geq 0$: _____

$x^2 + 1 > 0$: _____

$x^2 - 3x - 4 \leq 0$: _____

$-x^2 + 9 < 0$: _____

$2x^2 - 8x \geq 0$: _____

$x^2 - 2x + 3 \leq 0$: _____

Names (pair) _____ Date _____

2 ON YOUR OWN **Sign table.** Solve $(x-1)(x+3)<0$ with a sign table of the factors.

	$x<-3$	$-3<x<1$	$x>1$
$x+3$			
$x-1$			
$(x-1)(x+3)$			

$x \in$ ☐

3 IN PAIRS **True or false?** If it is false, write the correct solution.

$x^2<9 \Rightarrow x<3$ **true** / **false**

Correction: _____

$x^2+4>0 \Rightarrow x \in \mathbb{R}$ **true** / **false**

Correction: _____

$(x-2)^2 \leq 0 \Rightarrow$ no solution **true** / **false**

Correction: _____

4 IN A GROUP **The fence.** The garden area from the first lesson is $A(x)=x(10-x)$. For which sides x is the area greater than 21 m²?

☐

★ ON YOUR OWN **Exit card.** $x^2+x+1>0$: ☐