

GRAPHING QUADRATIC INEQUALITIES

Steps for Graphing a Quadratic Inequality on a Coordinate Plane:

- Determine the vertex and x-intercepts (if possible) of the quadratic function.

Algebraic Method	Calculator
Vertex: $x = -\frac{b}{2a}$, $y = \text{plug } x \text{ into original equation}$	Vertex: 2ND → TRACE → MAXIMUM/MINIMUM
X-Intercept: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	X-Intercept: 2ND → TRACE → ZERO

- Graph the parabola on the coordinate plane.

- Dashed Line: $>$ or $<$
- Solid Line: \geq or \leq

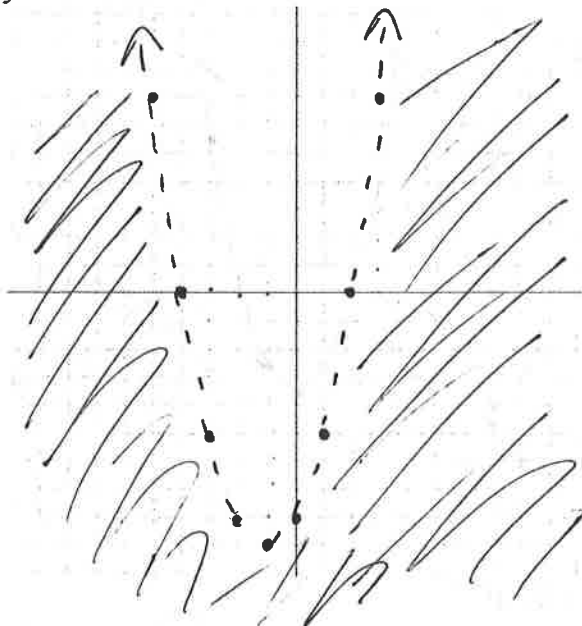
- Shade the solution:

- Shade ABOVE the vertex: $>$ or \geq
- Shade BELOW the vertex: $<$ or \leq

- Write your solution.

Solve each quadratic inequality and identify its solution.

1. $y < x^2 + 2x - 8$

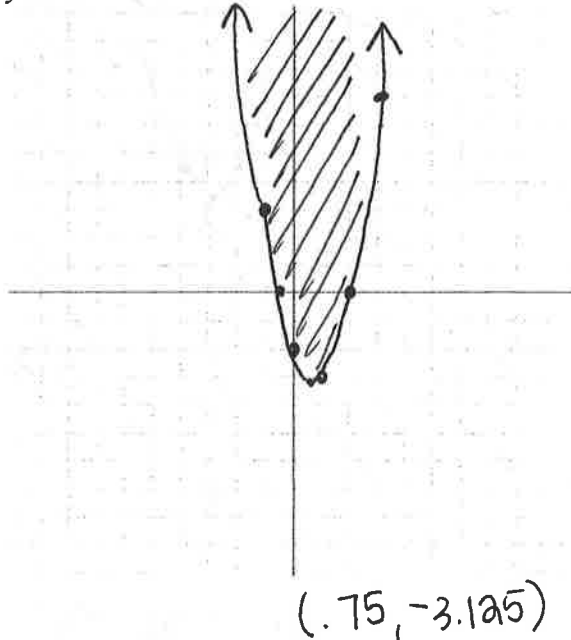


$x < -4$ (or) $x > 2$

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

zeros: $x = 2$ $x = -4$

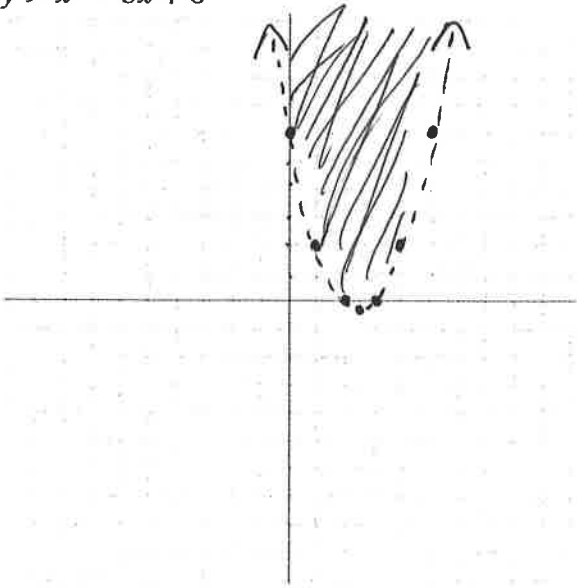
2. $y \geq 2x^2 - 3x - 2$



$-0.5 \leq x \leq 2$
and

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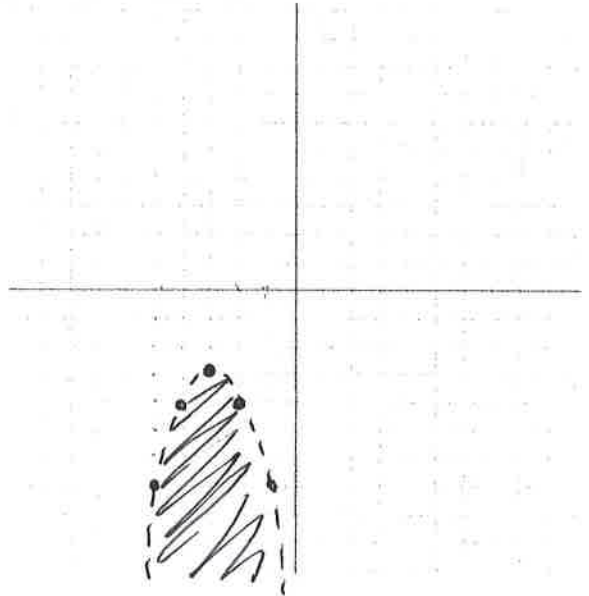
3. $y > x^2 - 5x + 6$



$2 < x < 3$
(ana)

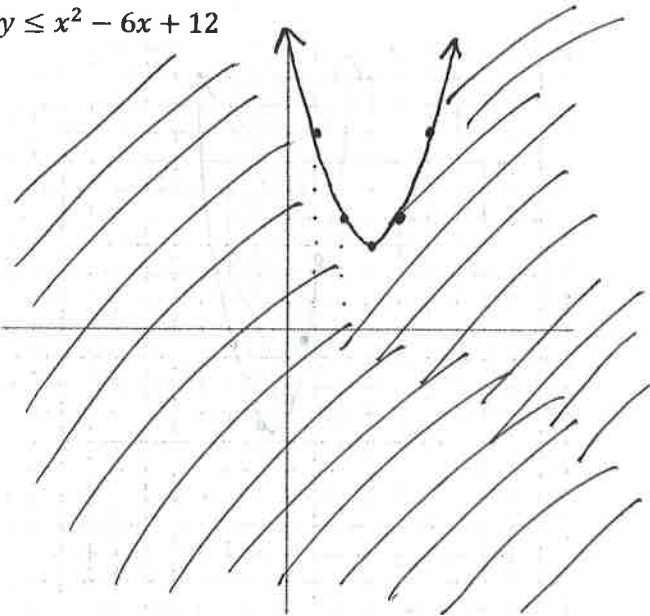
Algebraic:
 $(x-3)(x-2)$
 zeros $x=3, x=2$

5. $y < -x^2 - 6x - 12$



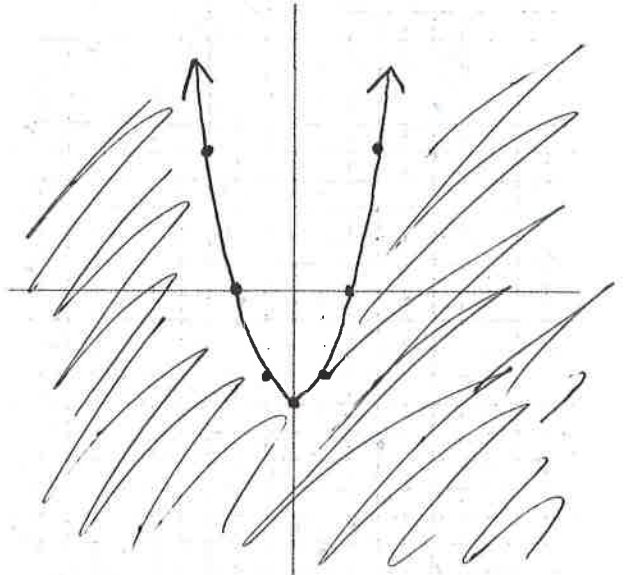
no solution
 • what if outside? - all sol.
 (above vertex)

4. $y \leq x^2 - 6x + 12$



all solutions

6. $y \leq x^2 - 4$



Algebraic:
 $(x-2)(x+2)$ $x \leq -2$ or $x \geq 2$
 $x=2, x=-2$

* If $>$ or $<$, replace 0 with y .