

Ch. 5 Review Notes

Thursday, May 31, 2018 2:41 PM



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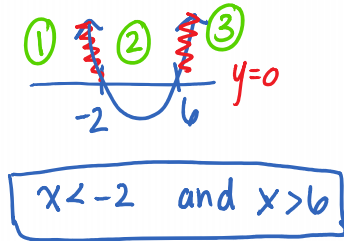
Chapter 5 Inequalities and Systems of Equations Review

Name _____

Steps to Solving Quadratic Inequalities:

1. Move everything to one side of the inequality and factor it.
2. Using the zeros, sketch the graph.
3. Write the solution to satisfy the inequality.
4. Test points from each region to check the solution.

Ex. Solve $x^2 - 4x - 12 > 0$
 $(x-6)(x+2) > 0$
 $x=6 \quad x=-2$



Test: ① $x = -3$
 $(-3)^2 - 4(-3) - 12 > 0$
 $9 + 12 - 12 > 0$
 $9 > 0$
 \checkmark

② $x = 0$
 $0^2 - 4(0) - 12 > 0$
 $-12 > 0$
 \times

③ $x = 7$
 $(7)^2 - 4(7) - 12 > 0$
 $49 - 28 - 12 > 0$

Steps to Graph a Linear or Quadratic Inequality:

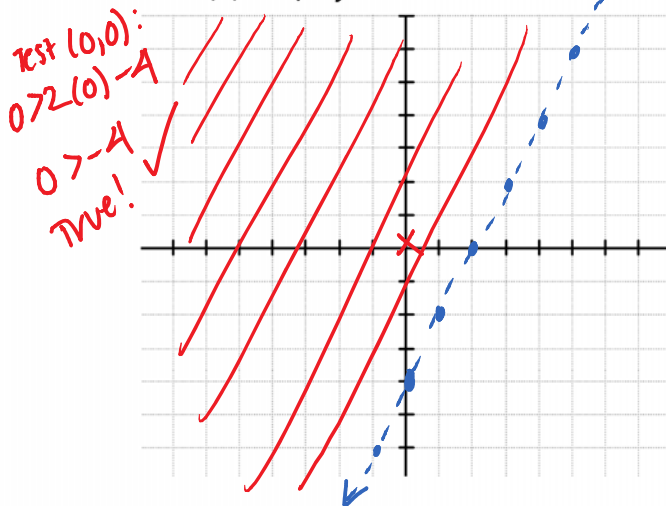
1. Graph the line or parabola on the coordinate grid. Make sure you identify if a dotted or solid line is required.

$>, <$ \rightsquigarrow dotted line

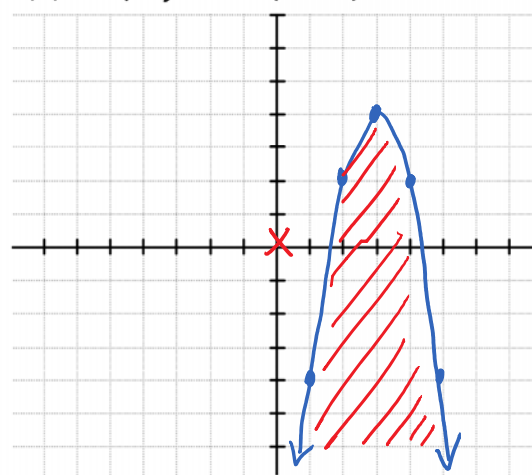
\geq, \leq \rightsquigarrow solid line

2. Choose a test point that is not on the curve. I suggest picking (0,0) unless it is on the curve.
3. Substitute the test point into the original equation:
 - If it satisfies the inequality shade on the region where the test point is
 - If it does not satisfy the inequality shade the opposite region

Ex. (a) Graph $y > 2x - 4$

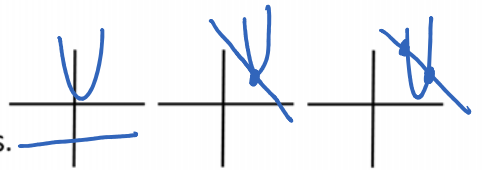


(b) Graph $y \leq -2(x - 3)^2 + 4$

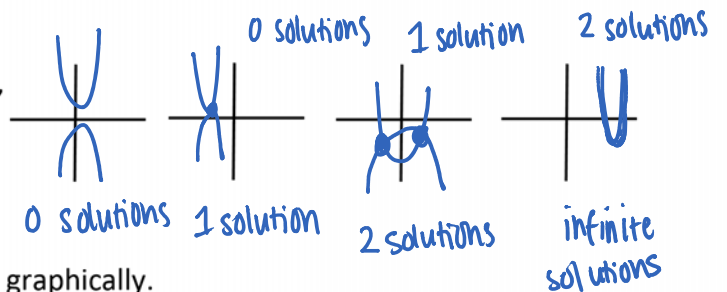


Test (0,0):
 $0 \leq -2(0-3)^2 + 4$
 $0 \leq -2(9) + 4$
 $0 \leq -18 + 4$
 $0 \leq -14$
 \times False

A solution of a linear-quadratic system of equations is an ordered pair, (x, y) , that satisfies both equations in the system. The system may have 0, 1, or 2 solutions.



A solution of a quadratic-quadratic system of equations is an ordered pair, (x, y) , that satisfies both equations in the system. The system may have 0, 1, 2, or infinitely many solutions.



Ex. Solve this system algebraically and graphically.

① $y = x^2 - 4x + 3$

② $y = 2x - 5$

$$x^2 - 4x + 3 = 2x - 5$$

$$-2x + 5 \quad -2x + 5$$

$$x^2 - 6x + 8 = 0$$

$$(x-4)(x-2) = 0$$

$$\downarrow \quad \downarrow$$

$$x=4 \quad x=2$$

Sub into ②

$$y = 2(4) - 5 \quad y = 2(2) - 5$$

$$y = 3 \quad y = -1$$

Solutions: $(4, 3)$ and $(2, -1)$

$$y = (x^2 - 4x) + 3 \quad \frac{-4}{2} = -2$$

$$y = (x^2 - 4x + 4 - 4) + 3 \quad (-2)^2 = 4$$

$$y = (x-2)^2 - 4 + 3$$

$$y = (x-2)^2 - 1$$

