

Math 2303  
Fall 2009  
Test 4 Review

First, let's talk about the last topic in Chapter 6, graphing a system of inequalities.

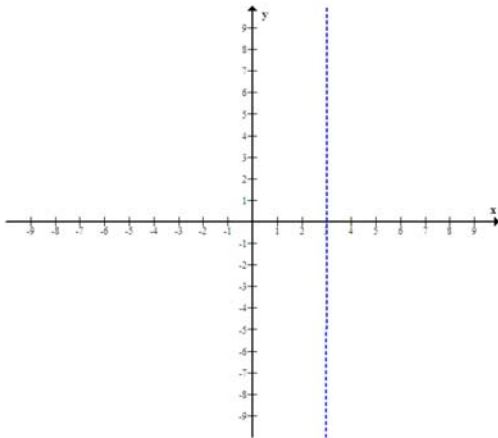
**Example 1:** Solve the system of inequalities:

$$x < 3$$

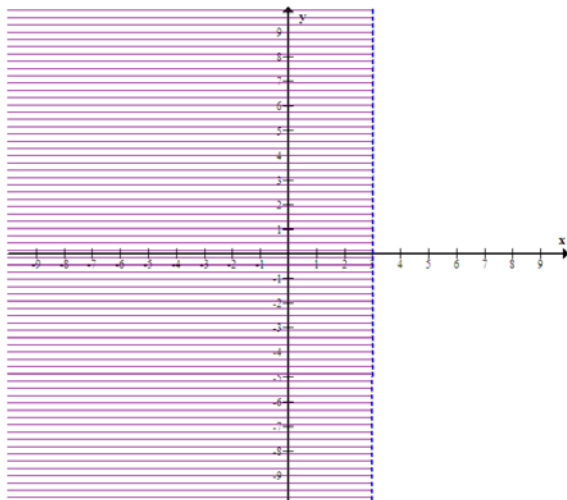
$$y \leq 4$$

Solution:

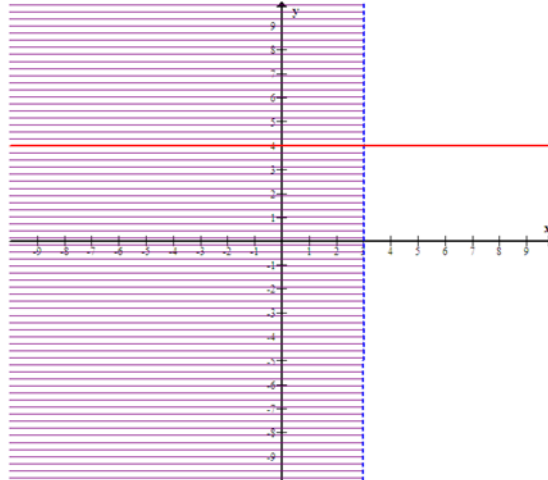
We'll start by graphing the line  $x = 3$  as a dotted line:



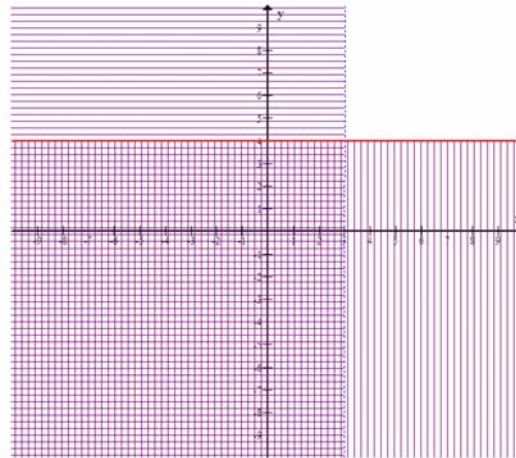
Since we're interested in values where  $x$  is less than 3, we'll shade the portion of the coordinate plane that is to the left of 3:



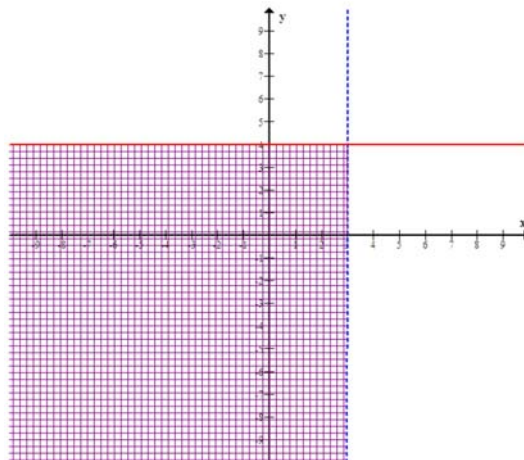
Next we'll graph the line  $y = 4$  as a solid line:



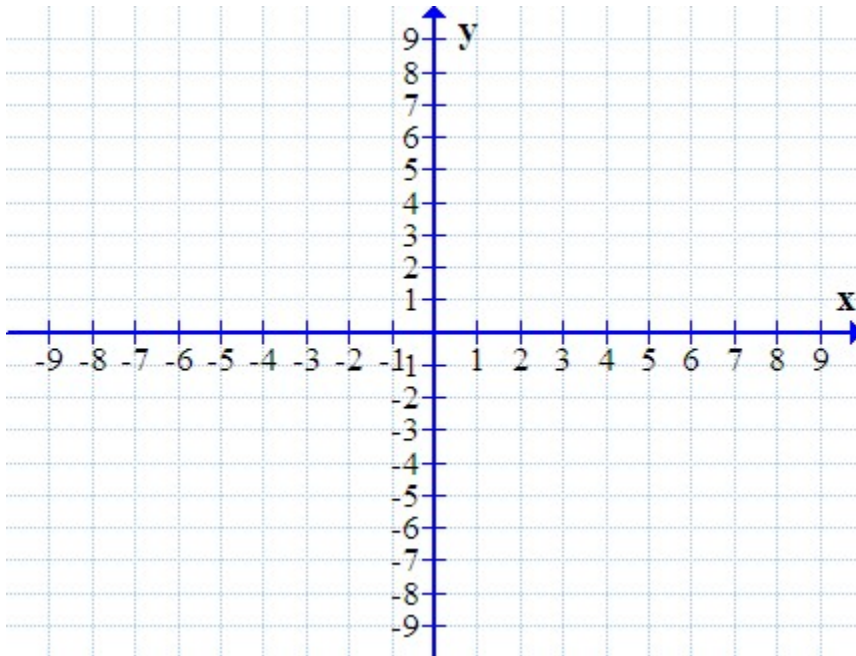
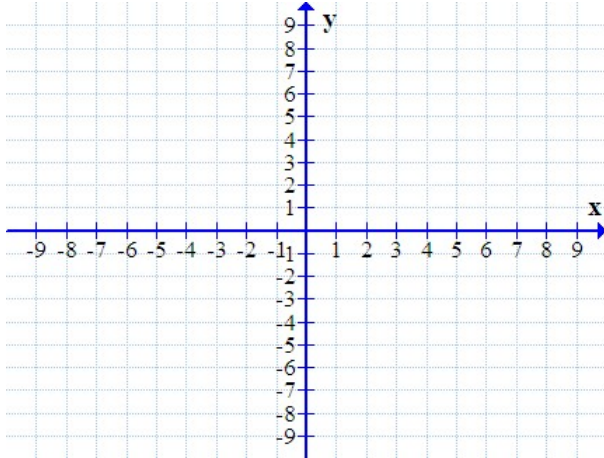
Finally, since we are looking for all points with  $y$  values less than or equal to 4, we'll shade below the line:



The part that we shaded twice is the solution.



Let's try another:  
Graph the system  
 $x \geq -3$   
 $y < 2$



A system of equalities:  
By substitution

$$x = 3y - 5$$

$$10 - 6y = -2x$$

By Linear Combination:

$$4x - 5y = 24$$

$$3x + 4y = -13$$

## Graphing Quadratic Functions

For the following quadratic functions:

- a. Does the parabola open up or down?
- b. Find the y-intercept. State it in coordinate point form.
- c. Find the x-intercept(s). State them in coordinate point form.
- d. Find the x-coordinate of the vertex.
- e. Find the y-coordinate of the vertex.
- f. State the axis of symmetry.
- g. Determine whether the function has a maximum or a minimum function value and state the value of the maximum or minimum.
- h. Graph, LABELING the axes, the intercepts and the

$$f(x) = -x^2 + 4x + 5$$

Word Problem

26. A rectangle's length is 10 cm than its width. If the area of the rectangle is  $56 \text{ cm}^2$ , find the dimensions of the rectangle. Find the perimeter of the rectangle.

Factoring and Solving Quadratics

$$15x^2 - 7x - 2 = 0$$

You MUST KNOW THE QUADRATIC FORMULA

$$x^2 + 4x - 8 = 0$$

Domains of Functions  
Rules –

$$f(x) = 2x^2 - 4x + 4$$

$$f(x) = \sqrt{2-x}$$

$$f(x) = \frac{3}{x-4}$$

Evaluating a Function