

**Math 1313**  
**Prerequisites**

**Equations (These will NOT be given on the test. You need to memorize them.)**

Slope of a line:  $m = \frac{y_2 - y_1}{x_2 - x_1}$

Slope-Intercept Form:  $y = mx + b$

Point-Slope Form:  $y - y_1 = m(x - x_1)$

Standard Form:  $ax + by = c$

Example 1: Write an equation for the line that passes through (-2, 5) and (4, 8).

**Parallel and Perpendicular Lines**

Two lines are parallel if and only if their slopes are the same.

Two lines are perpendicular if and only if their slopes are negative reciprocals of each other.

Example 2: Find an equation of the line that passes through the point (-2, 2) and is parallel to the line  $2x - 4y - 8 = 0$ .

Example 3: Find an equation of the line that passes through the point  $(-1, -3)$  and is perpendicular to the line that passes through  $(3, -4)$  and  $(9, -6)$ .

Example 4: Find the point of intersection.

a.  $2x - 5y = 2$   
 $x - 4y = -2$

b.  $2y = 4 - x$   
 $3x + 6y = 13$

c.  $2x - y = 3$   
 $2y = 4x - 6$

Example 5: Example 8: True or False?

I. A line through  $(3, 4)$  and  $(3, 5)$  is a horizontal line.

II. The line  $y = 2x - 2$  rises to the left.

III. Line  $L_1$  has slope  $m$ . Line  $L_2$  is parallel to line  $L_1$ , so  $L_2$  has slope  $-m$ .

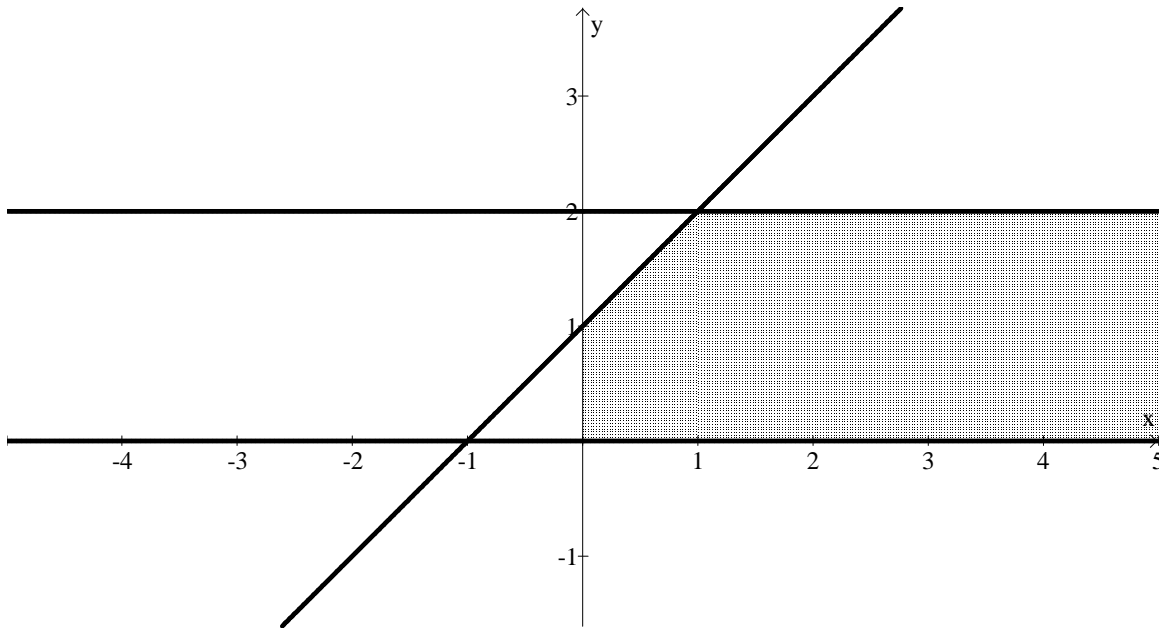
IV. The y-intercept of  $\frac{1}{14}x + \frac{5}{16}y = \frac{25}{4}$  is  $\frac{4}{5}$ .

V. The solution to  $-2x - 3y \geq 4$  is the half-plane lying below the line  $-2x - 3y = 4$ .

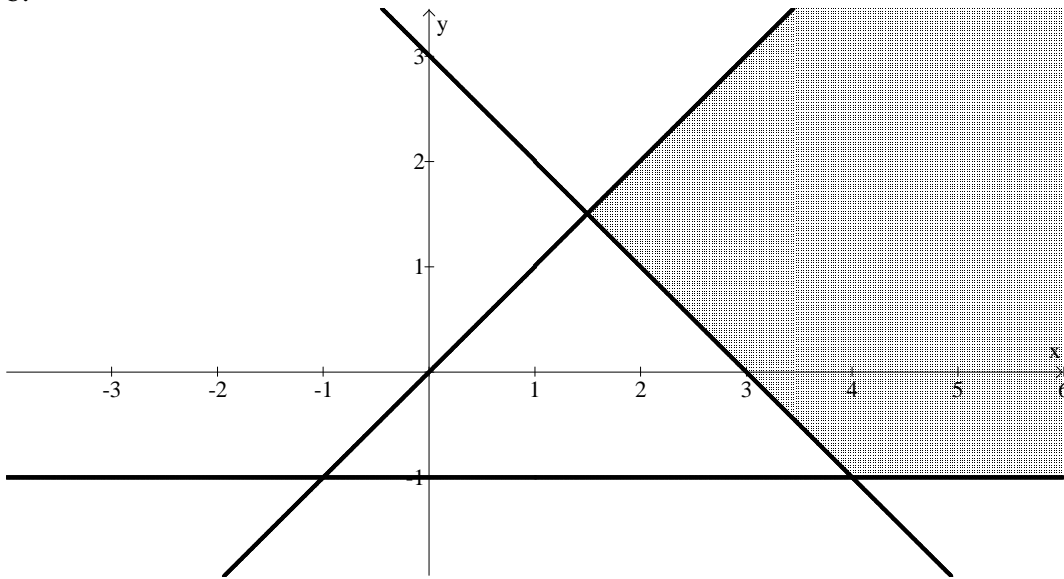
VI. The solution to  $-x + y \geq 6$  is the half-plane lying below the line  $-x + y = 6$ .

Example 6: Write a system of linear inequalities that describes the shaded region.

a.



b.



c. One line has slope 1. Another line has slope  $-\frac{2}{5}$ .

