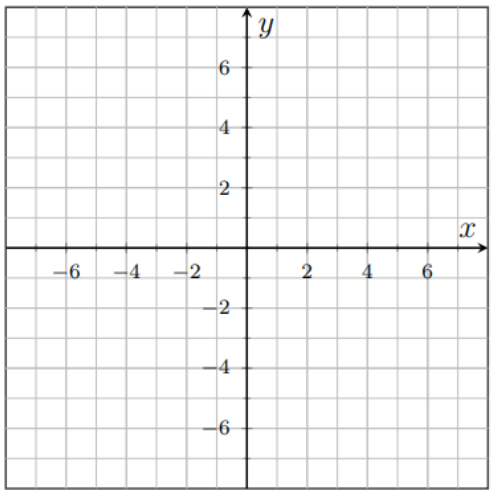
Math 60, Sections 4.8 and 4.10 Group Activity Name:_____

Section 4.8 Horizontal, Vertical, Parallel and Perpendicular Lines

1. Graph and find the slope of the line between each pair of points. Then write the equation of each line.

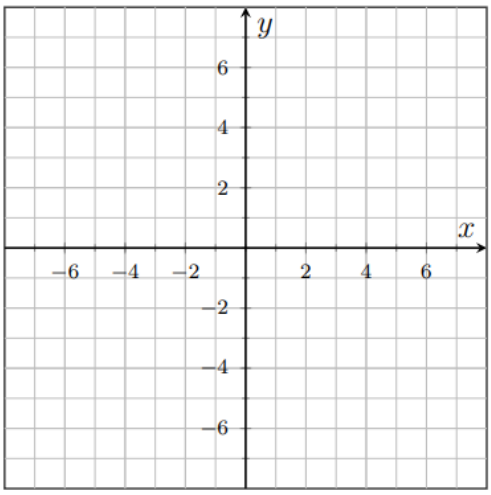
a. $(5,-1)$ and $(5,3)$



Slope:

Equation:

b. $(2,-2)$ and $(5,-2)$

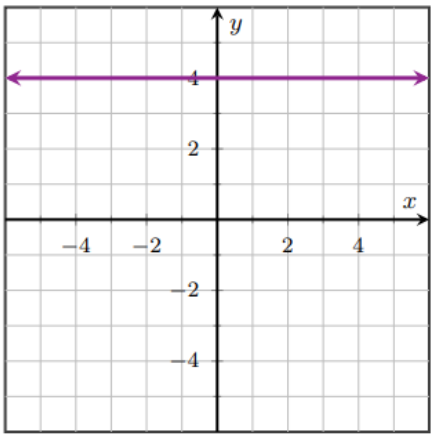


Slope:

Equation:

2. Write the equation of each line. Then identify the slope, y-intercept and x-intercept.

a.



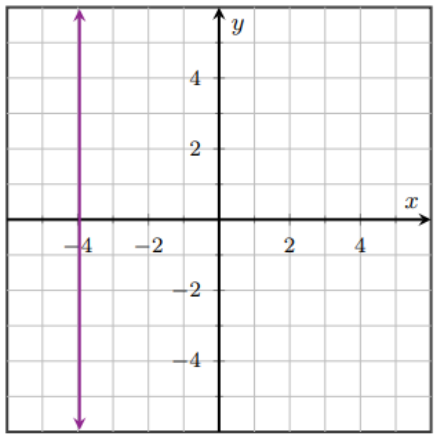
Equation:

Slope:

x-intercept:

y-intercept:

b.



Equation:

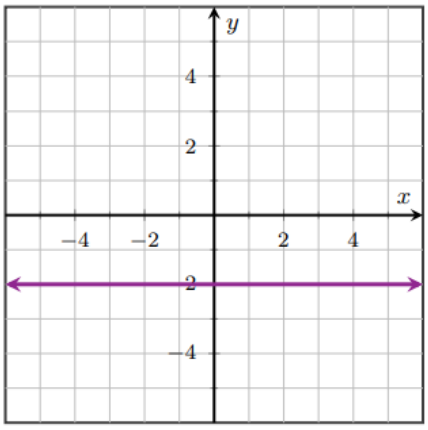
Slope:

x-intercept:

y-intercept:

3. Write the equation of each line. Then identify the slope, y-intercept and x-intercept.

a.



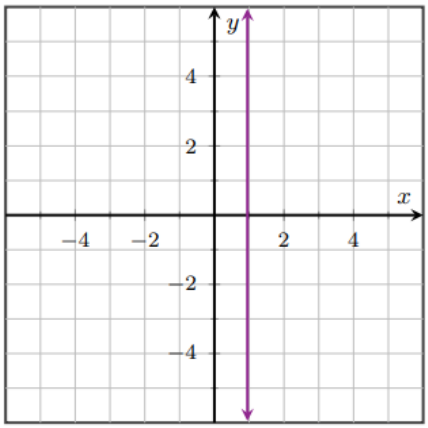
Equation:

Slope:

x-intercept:

y-intercept:

b.



Equation:

Slope:

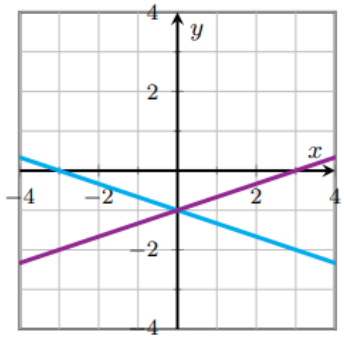
x-intercept:

y-intercept:

<u>Parallel and Perpendicular Lines</u>

4. Determine whether the lines are parallel, perpendicular or neither. Then write the slope of each line.

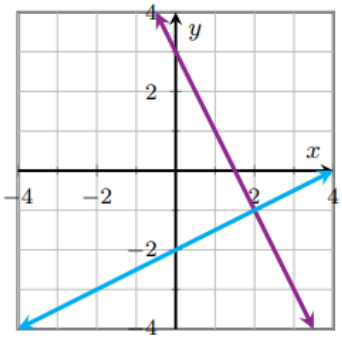
a.



Slope of line 1:

Slope of line 2:

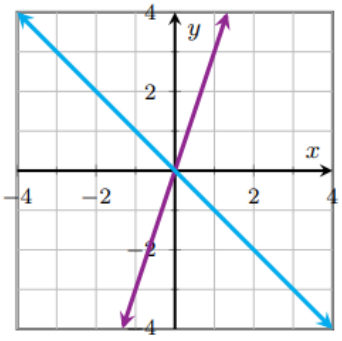
b.



Slope of line 1:

Slope of line 2:

c.



Slope of line 1:

Slope of line 2:

Parallel lines have the _____ slope.

The slopes of perpendicular lines are _____ _____.

5. Determine whether each pair of lines is parallel, perpendicular or neither.

a. $y = 3x + 4$ and $y = -\frac{1}{3}x - 9$

b. $y = -\frac{2}{3}x + 7$ and $y = -3x - 1$

c. $x = 3$ and $y = -1$

d. $2x + y = 4$ and $6x+3y = 7$

<u>Writing the equation of a line given a parallel or perpendicular line</u>

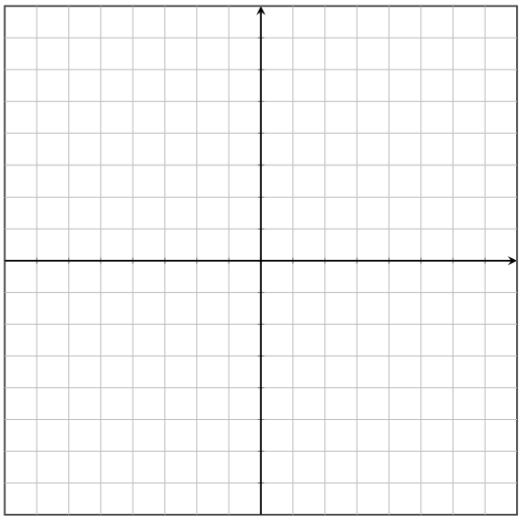
6. A line passes through the point $(-7, 8)$ and is parallel to the line $x = 5$. Find the equation of the line.

7. Line k has the equation $y = 2x + 5$. Line l is perpendicular to line k, but it goes through the point $(4, 6)$. Find an equation for line l in point-slope and slope-intercept form.

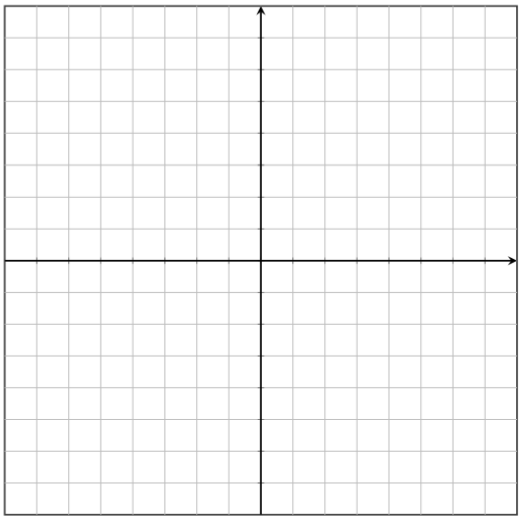
8. Line m passes through the points $(4, 7)$ and $(-10, 7)$. Line n passes through the points $(6, 2)$ and $(-10, 2)$. Determine how the two lines are related. Are they parallel, perpendicular or neither?

Section 4.10 Linear Inequalities in Two Variables

9. a. Graph the linear inequality $y > \frac{1}{2}x - 3$.

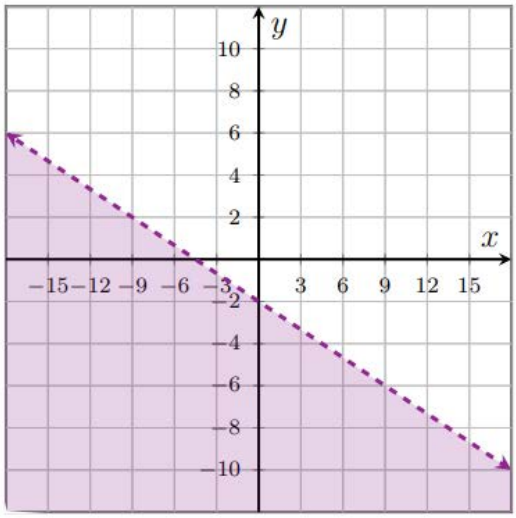


b. Graph the inequality $y \leq -2x + 5$

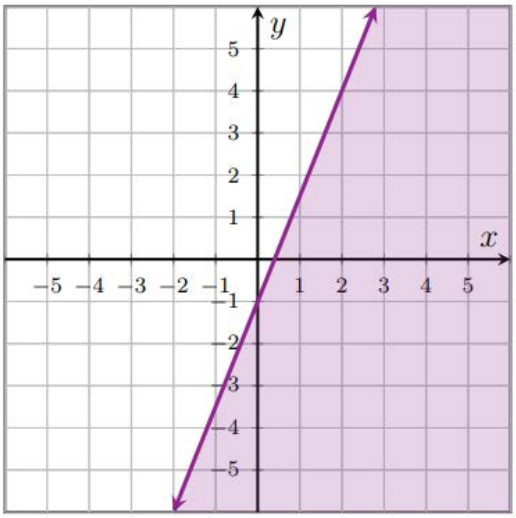


10. Find and state an inequality whose solution set would be the graph shown.

a.



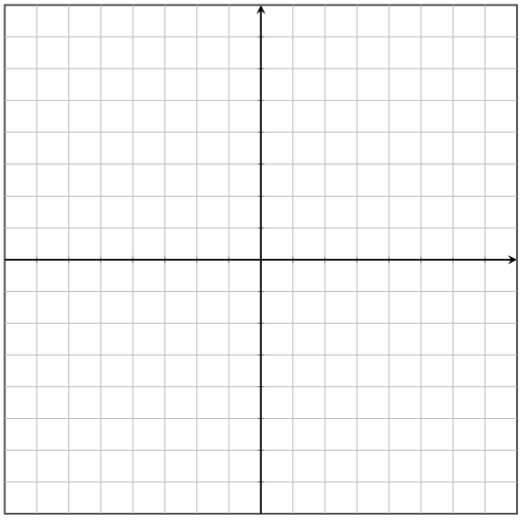
b.



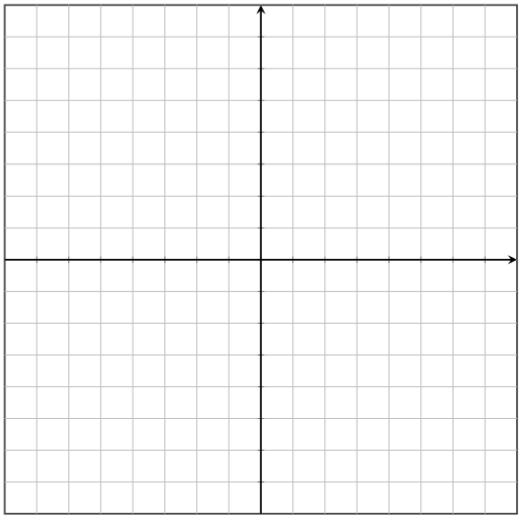
11. a. Is the point (6,0) a solution to the inequality graphed in 10a above? How could you prove this algebraically?

b. Is the point (3,-2) a solution of the inequality graphed in 10b above? Prove this algebraically.

12. a. Graph the linear inequality $2x-5y<10$.



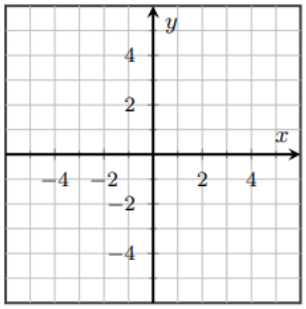
b. Graph the inequality $x>-2$



More Practice

13. For parts a and b, graph each line and determine its slope. For parts c and d, state the equation of the line and its slope.

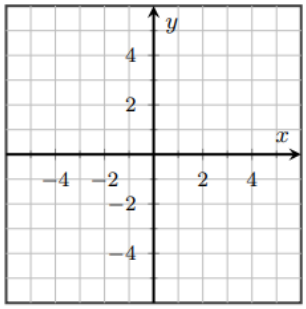
a.



Equation: $y=-1$

Slope:

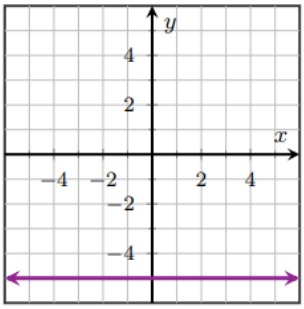
b.



Equation: $x=5$

Slope:

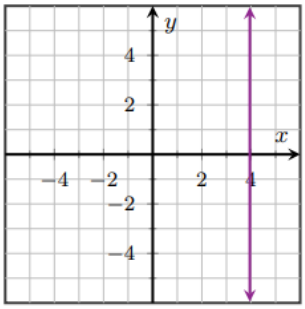
c.



Equation:

Slope:

d.



Equation:

Slope:

14. Determine whether each pair of lines is parallel, perpendicular or neither.

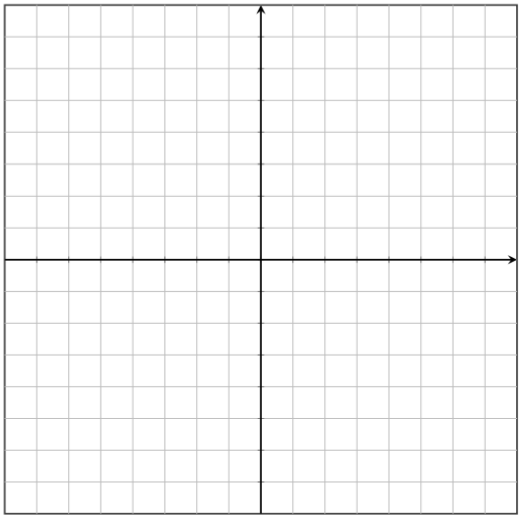
a. $y=7x+1$ and $y=x-7$

b. $y=8x+1$ and $y=-\frac{1}{8}x+3$

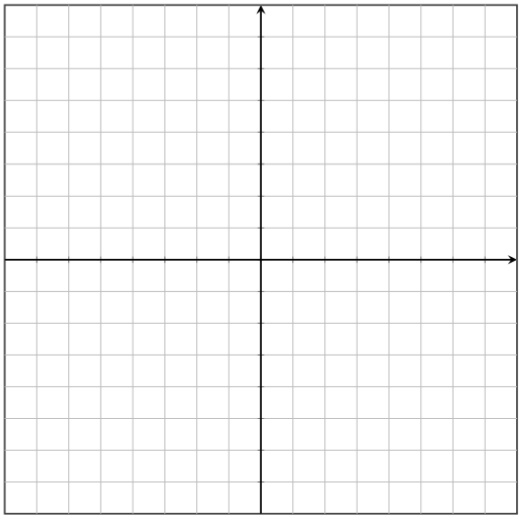
c. $x = -5$ and $x = 4$

d. $3x + y = 4$ and $6x+2y = 7$

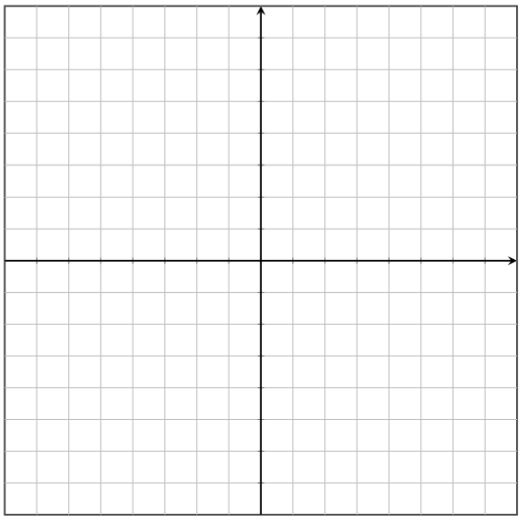
15. a. Graph the linear inequality $x - y > 4$.



b. Graph the inequality $x \geq -3$



16. a. Graph the linear inequality $2x - 3y < -2$.



b. Graph the inequality $y > 4$