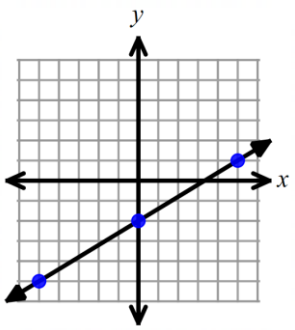
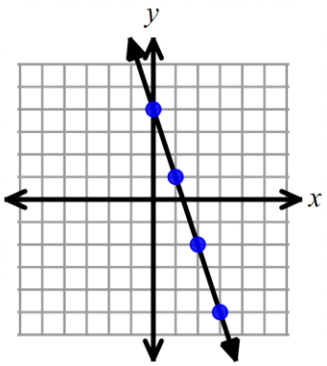
2.1 Notes: Slope

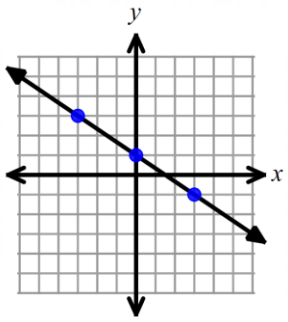
Slope: What does it mean? Watch this video, from the start to 4:40:
https://www.youtube.com/watch?v=zihsQC0IUd8&ab_channel=MashupMath

Slope can be thought of as:

Examples: Find the slope of each line from the graphs shown. Write your answer in simplified form.

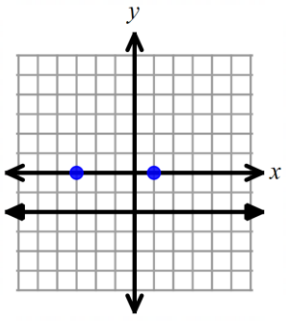
1) 

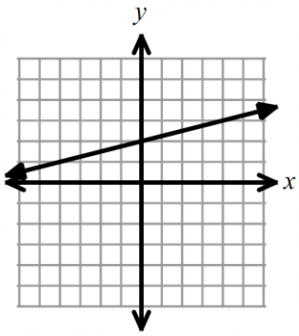
2) 

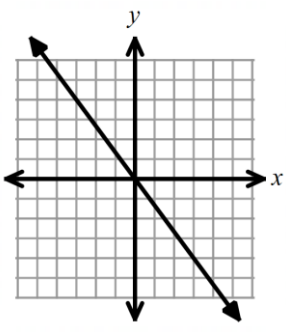
3) **You try!**


Types of slope (positive, negative, zero, undefined):

You try! Find the slope each line graphed below.

4) 

5) 

6) 

The Slope Formula:

Examples: Use the Slope formula to find the slope of the line connecting the two listed points.

7) (5, 3) and (7, 6)

8) (10, -2) and (16, 20)

9) (3, 13) and (7, 1)

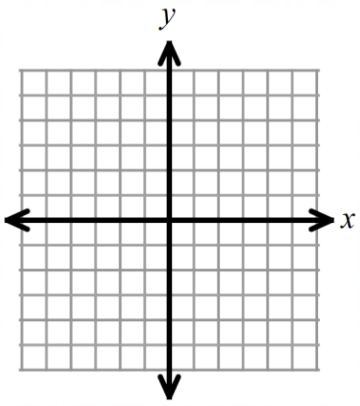
You try!

10) (6, 1) and (12, 4)

11) (-4, 1) and (5, -2)

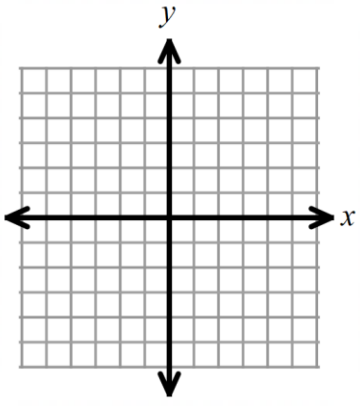
12) (7, 1) and (12, 1)

Example 13: Use the graph to draw a line that goes through the point (4, 2) and has a slope of $-\frac{3}{4}$.



You try!

Example 13: Use the graph to draw a line that goes through the point (-1, -3) and has a slope of 5. Hint: think of the slope as a fraction.



2.1 Notes: Graphing Lines in $y = mx + b$ form

What is a line?

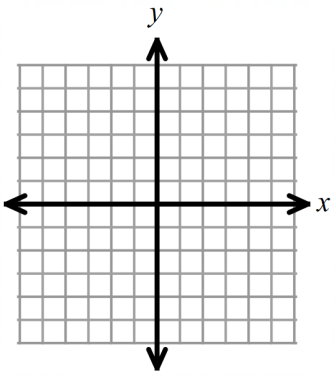
Slope-intercept form of a line:

Graphing lines in slope-intercept form:

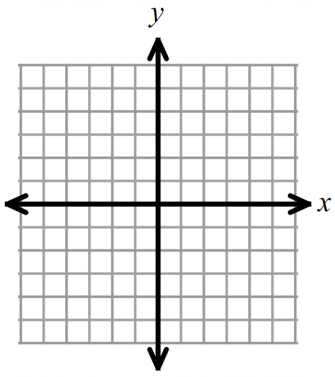
1) *begin* with the *b*-value (the ____- _____)
2) use the slope *m* to *move* to the next point.
   Reminder: slope =

Examples: Graph each line in slope intercept form below. You need *at least* two points on your graph.

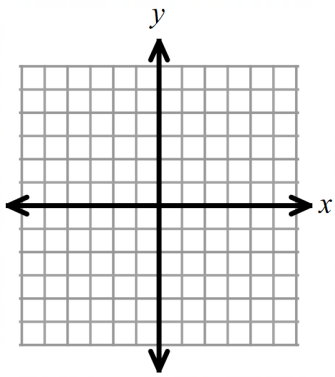
1) $y = \frac{2}{3}x - 4$



2) $y = -\frac{1}{4}x + 3$

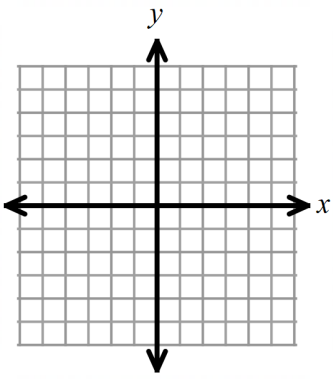


3) $y = 2x + 5$

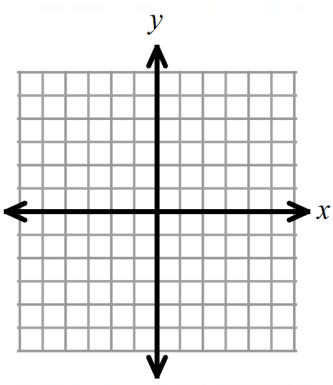


You try!

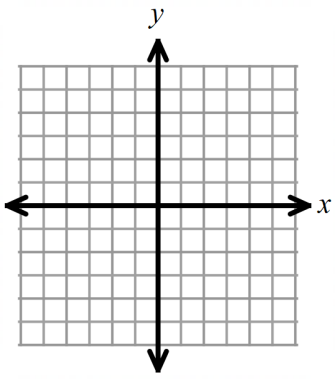
4) $y = -\frac{5}{3}x + 2$



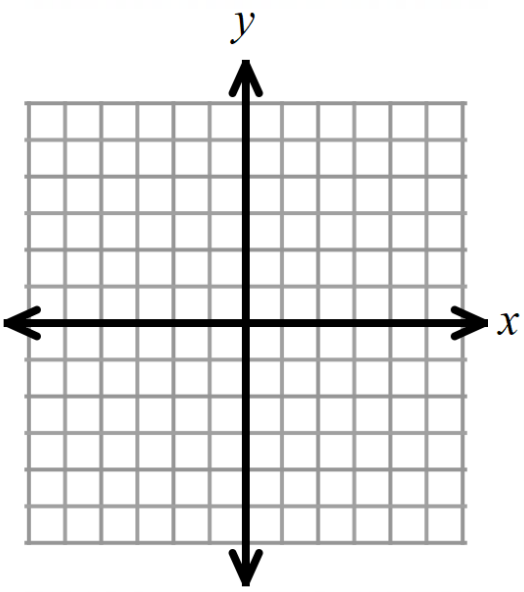
5) $y = x - 1$



6) $y = 3x + 4$



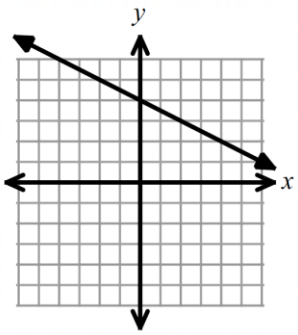
Activity: Use the coordinate system below, along with a spaghetti noodle, to quickly graph the equations given by your teacher.



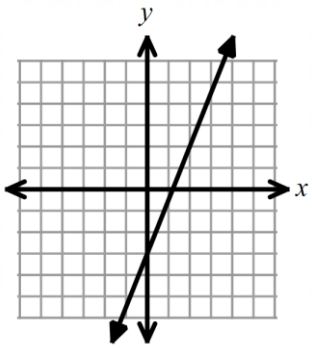
Writing Equations of Lines in Slope-Intercept Form:

Examples: Given each graph, write the equation of the line shown in slope-intercept form.

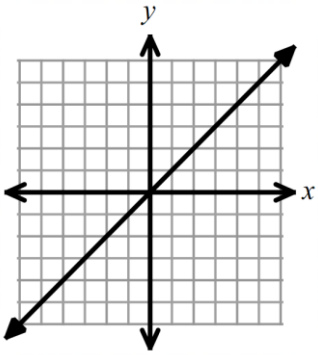
7)



8)

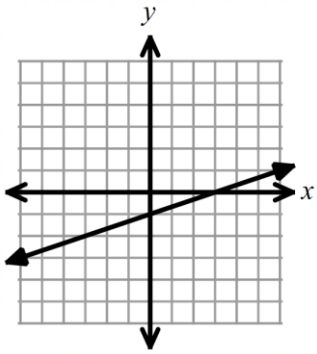


9)

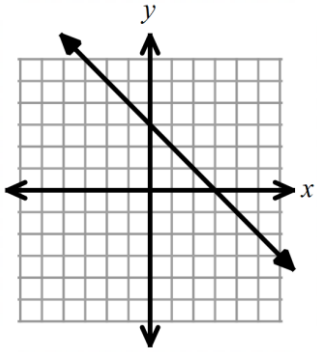


You try!

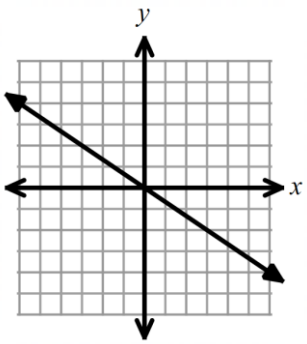
10)



11)



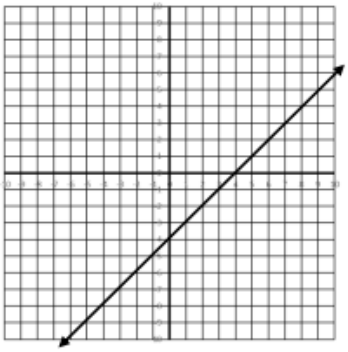
12)



Alg 1 Credit Recovery Sem 1 Ch 2 Notes: Graphing Lines

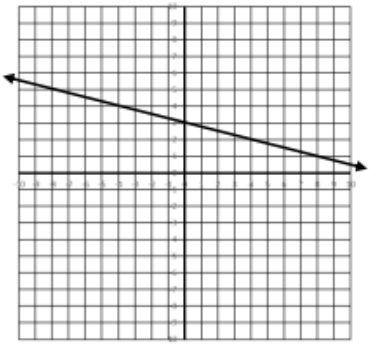
The equation for each problem DOES NOT MATCH the graph below it. Find the correct match and write the letter of that graph in the blank.

1. Graph y = 4x – 2 _____



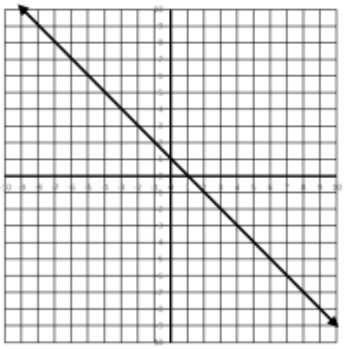
A

2. Graph y = ½ x + 5 _____



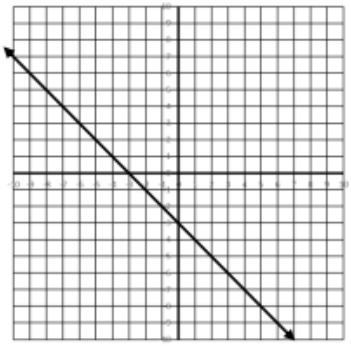
B

3. Graph y = - ¼ x + 3 _____



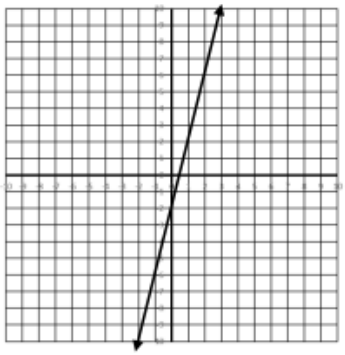
C

4. Graph y = x – 4 _____



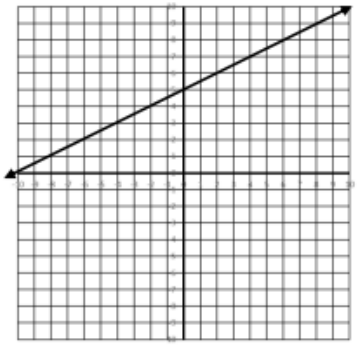
D

5. Graph y = -x + 1 _____



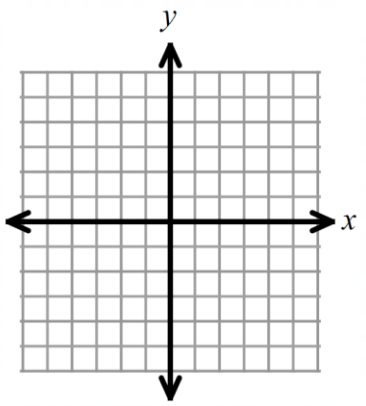
E

6. Graph y = -x – 3 _____



F

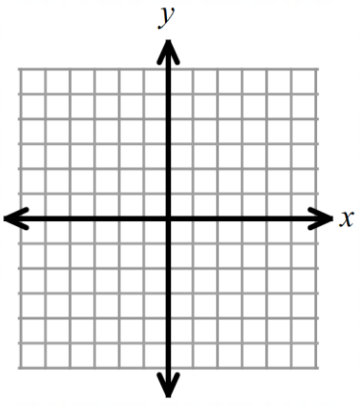
2.3 Notes: Graphing Lines in (h, k) form



Exploration:

- A line goes through the point (-3, 2). Draw as many lines as possible that meet this requirement.

- A line has slope of $m = \frac{4}{5}$. Draw as many lines as possible that meet this requirement.



(h, k) form of a line:

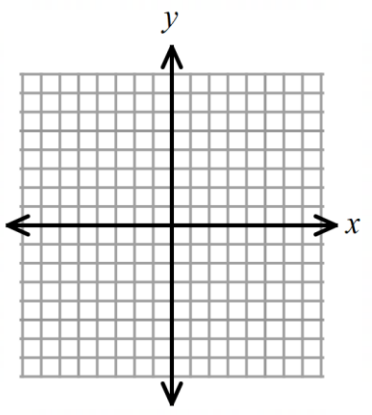
Graphing lines in (h, k) form:

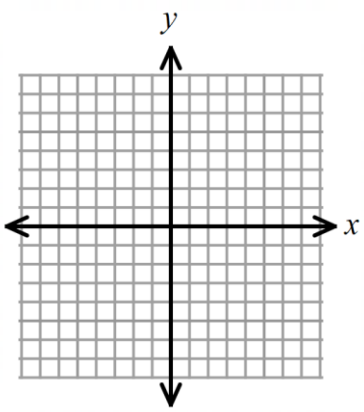
Examples: Graph each line.

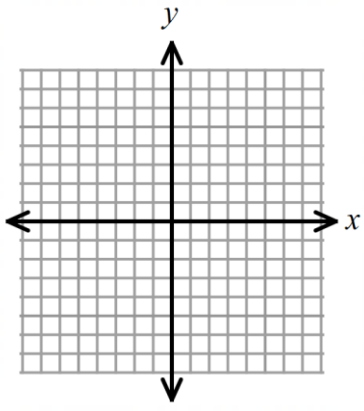
1) $y = \frac{1}{3}(x - 4) - 3$

2) $y = -4(x + 2) + 5$

3) $y = -\frac{2}{5}(x + 1)$

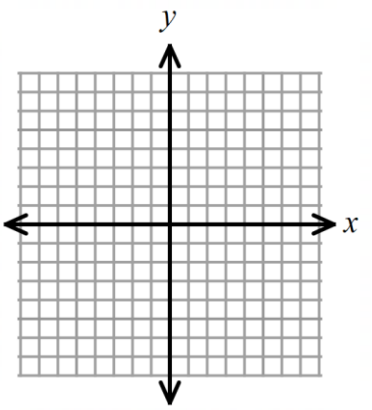




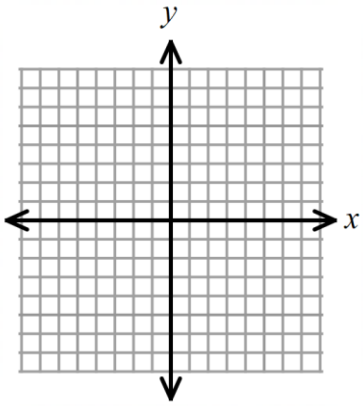


More practice: Graph each line.

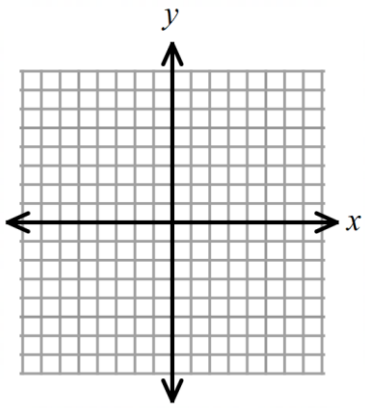
4) $y = -\frac{7}{2}(x+1) - 3$



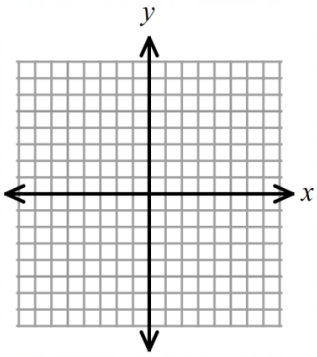
5) $y = 3(x-5) + 2$



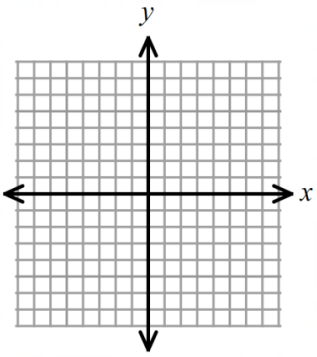
6) $y = -\frac{1}{4}(x-4)$



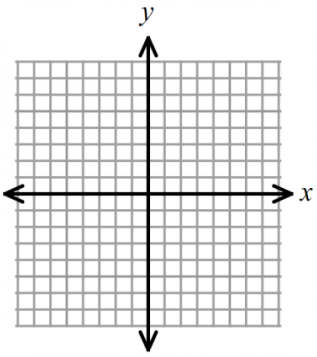
Alternative method: Consider the equation from #2) $y = -4(x+2) + 5$
Convert this equation into slope-intercept form, and then graph the line.
Compare to your result from #2.



7) Use the equation from #5. Convert this into slope-intercept form, and then graph. Compare with your result from #5.



8) Use the equation from #6. Convert this into slope-intercept form, and then graph. Compare with your result from #6.



2.4 Notes: Graphing Lines in Standard Form

Standard Form of a Line

Converting Equations to Slope-Intercept Form

Examples: Each line is in standard form. Convert each line to slope-intercept form.

1) $3x + y = -2$

2) $-4x + 2y = 6$

3) $7x - 5y = -10$

4) $-x + 4y = 12$

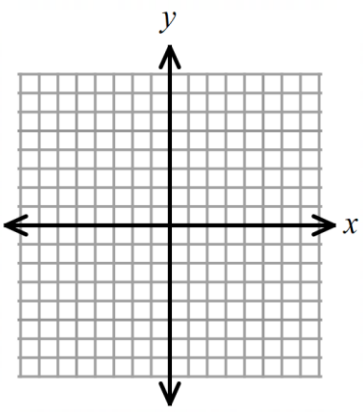
5) $-8x + 10y = 11$

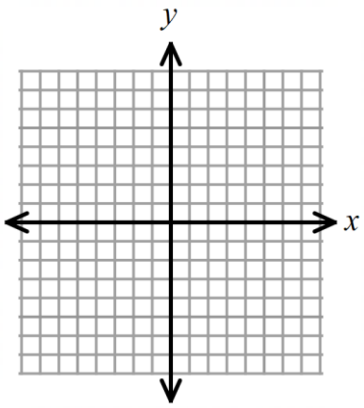
6) $6x - y = 14$

Examples: Each line is in standard form. Convert each line to slope-intercept form. Then graph each line.

7) $-2x + 5y = 10$

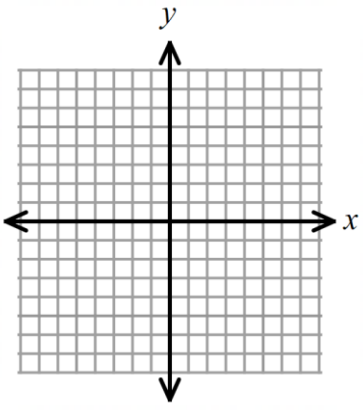
8) $4x - 3y = 9$

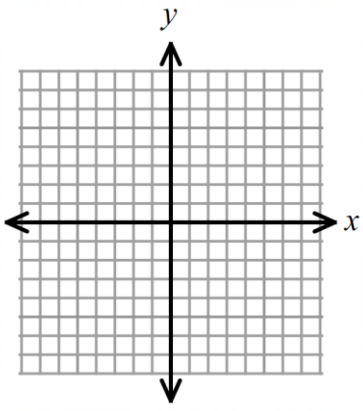




9) $7x - 7y = 14$

10) $-x - y = 3$

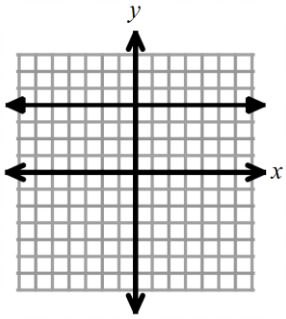




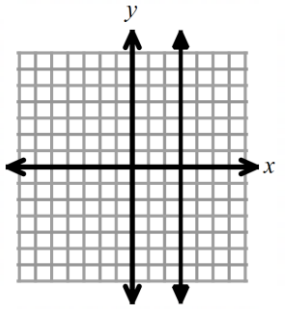
2.5 Notes: Graphing Special Lines

Exploration! Work with your group or partner.

A. Consider the horizontal line shown below. Name 5 points on this line. What do these points have in common?



B. Consider the vertical line shown below. Name 5 points on this line. What do these points have in common?

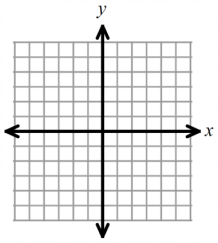


Equations of Special Lines

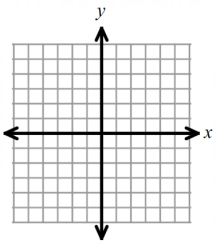
Horizontal Lines **Vertical Lines**

Examples: Graph each special line below.

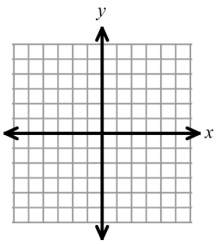
1) $y = -2$



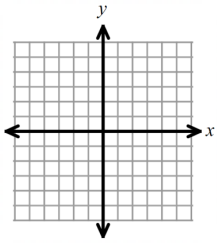
2) $x = 1$



3) $x = -4$

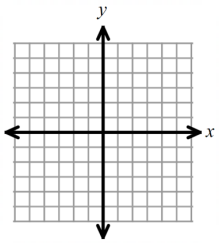


4) $y = 5$

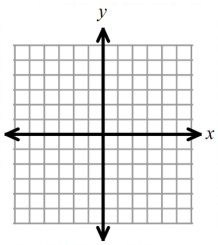


You try!

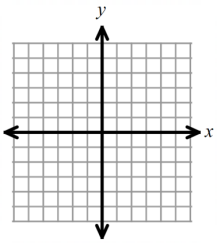
5) $y = 3$



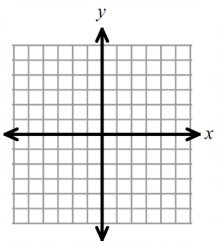
6) $x = -2$



7) $y = 0$

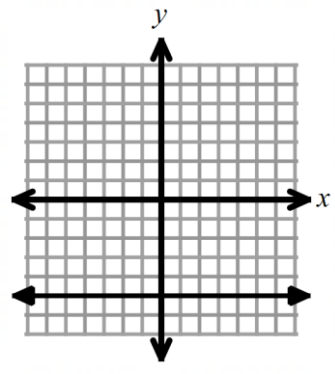


8) $x = 0$

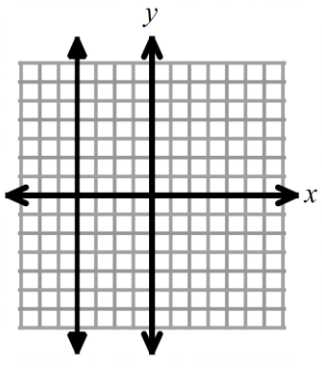


Examples: For each special line graphed below, write its equation.

9)

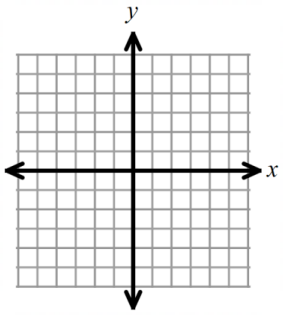


You try! 10)

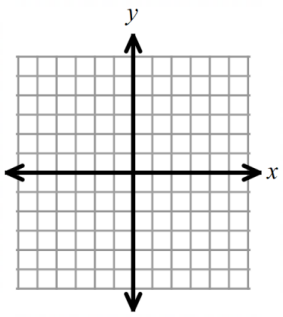


As a reminder, not all lines are vertical lines. Graph the lines below, which is a mix of special lines and slanted lines.

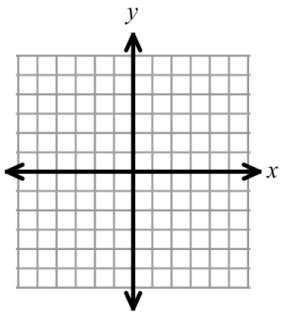
11) $y = 2x + 3$



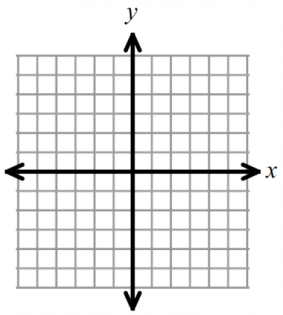
12) $y = 2$



13) $y = 2x$

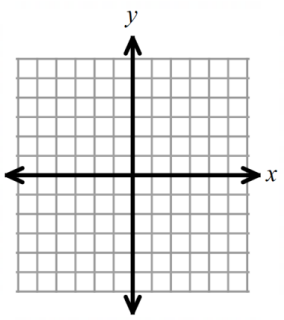


14) $x = 2$

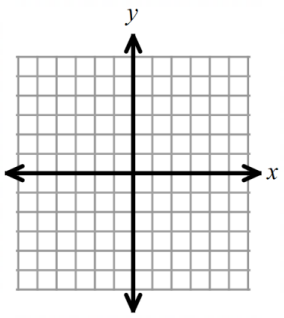


You Try!

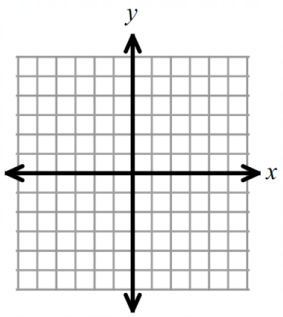
15) $y = 1$



16) $y = x + 3$



17) $y = x$



18) $x = 1$