Graphing Lines

Class Goals – By the end of the period, you will understand and be able to…

- Write the equation of a line in slope-intercept form.
- Apply slope-intercept form to graph a line.

Warm-Up

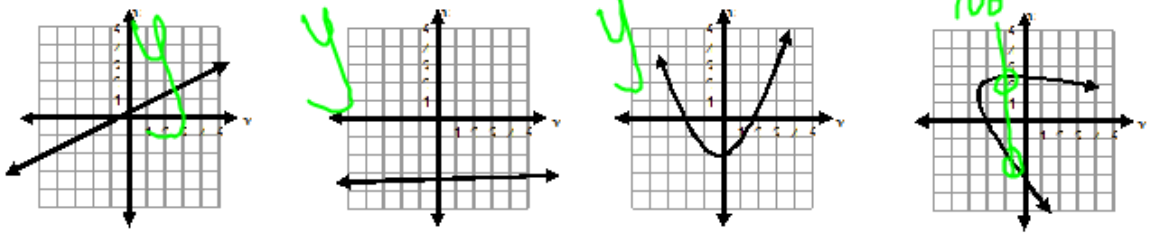
1. Identify the domain and the range of the relation. Is the relation a function?

x	y
1	3
2	3
3	5
4	1

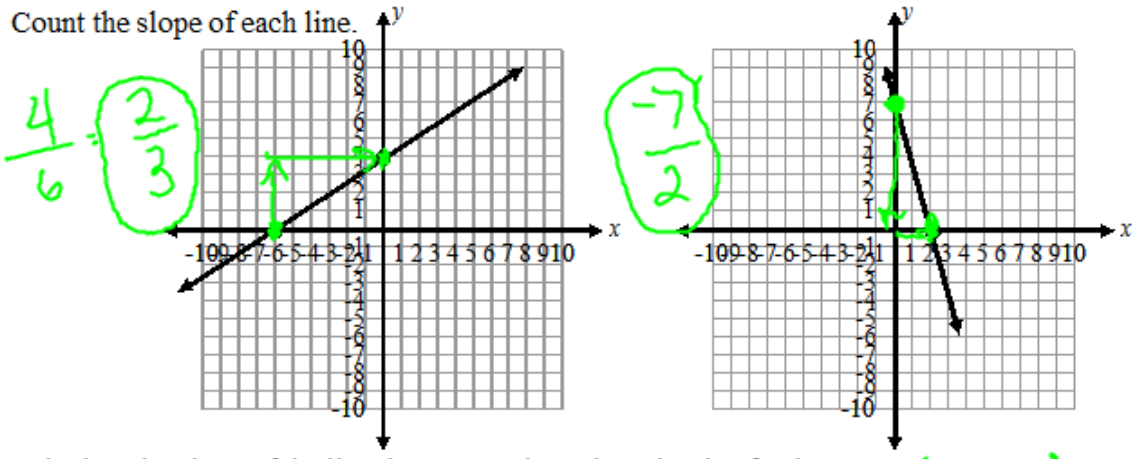
Function

Domain: 1, 2, 3, 4 Range: 3, 5, 1

2. Identify which curves are functions.



3. Count the slope of each line.



4. Calculate the slope of the line that passes through each pair of points.

(0, 5) and (4, -7) $m = \frac{-7-5}{4-0} = \frac{-12}{4} = -3$

(-6, 3) and (-2, 3) $m = \frac{3-3}{-2+6} = \frac{0}{4}$ Zero

Horizontal

5. Which line is steeper in #3 & #4? Explain.

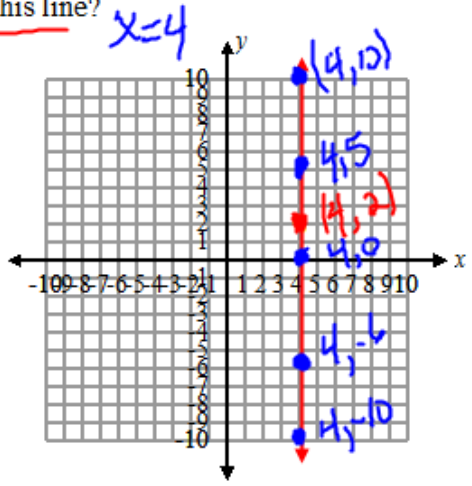
$\frac{2}{3} < \frac{7}{2}$

6. Give the Algebra 2 definitions of parallel and perpendicular

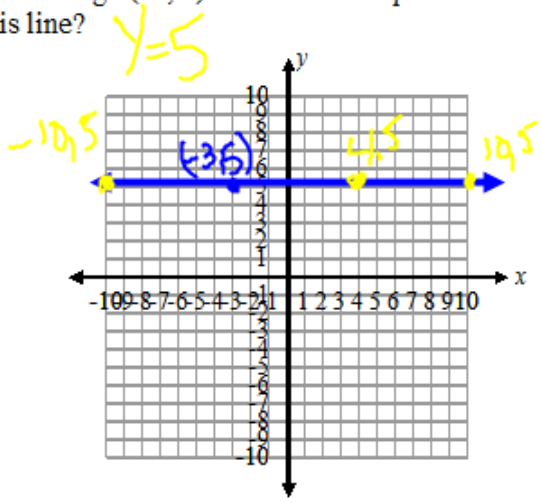
Same Slope different y-intercept

Opposite-Reciprocal Slopes

Example #1 Graph the vertical line that passes through (4, 2). What is the equation of this line?

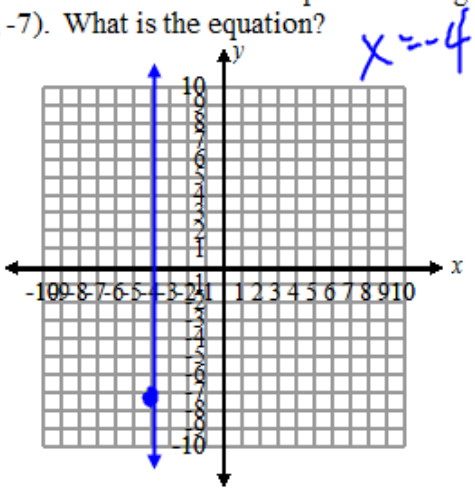


Example #2 Graph the horizontal line that passes through (-3, 5). What is the equation of this line?

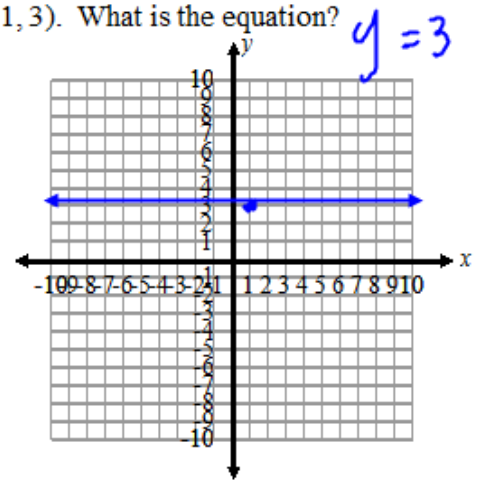


Practice Problems – Graph the line and give the equation of the line.

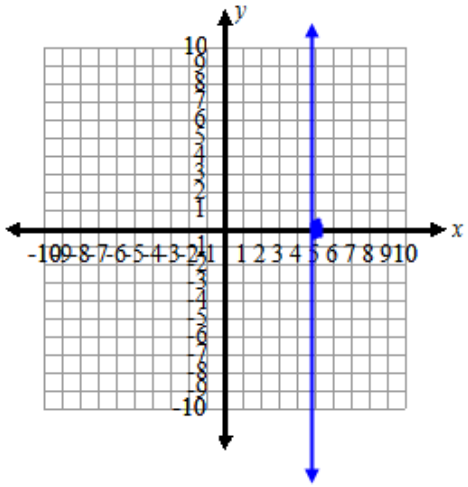
1. The vertical line that passes through (-4, -7). What is the equation?



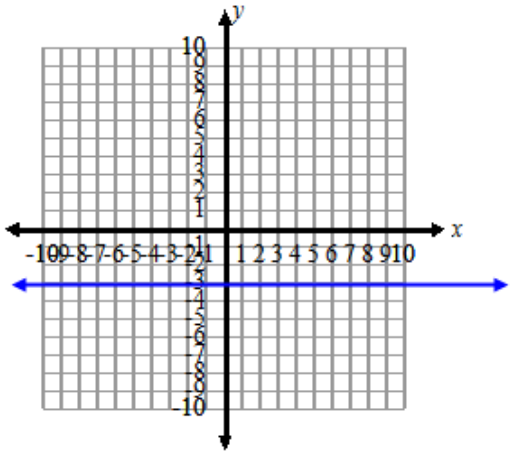
2. The horizontal line that passes through (1, 3). What is the equation?



3. Graph the line $x = 5$.

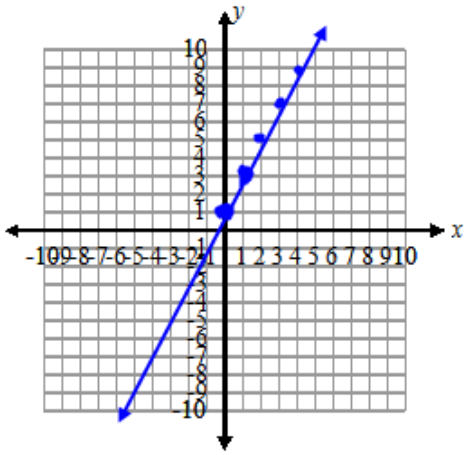


4. Graph the line $y = -3$.

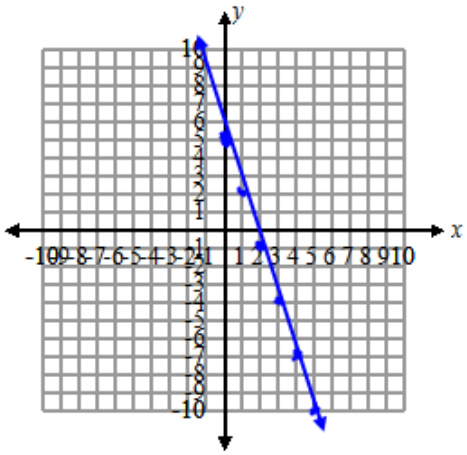


y-intercept: the point a line crosses the y-axis.

Example #3 Graph the line that has a slope of $\frac{2}{1}$ and a y-intercept of 1.

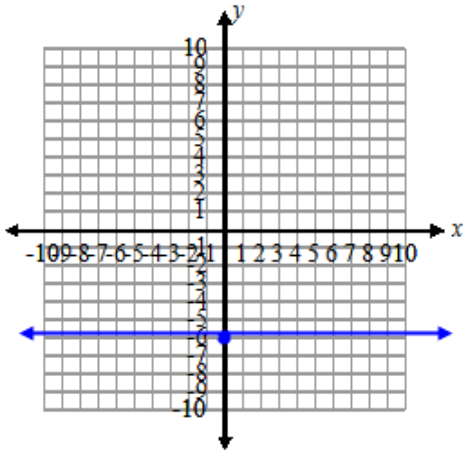


Example #4 Graph the line that has a slope of $\frac{-3}{1}$ and a y-intercept of 5.



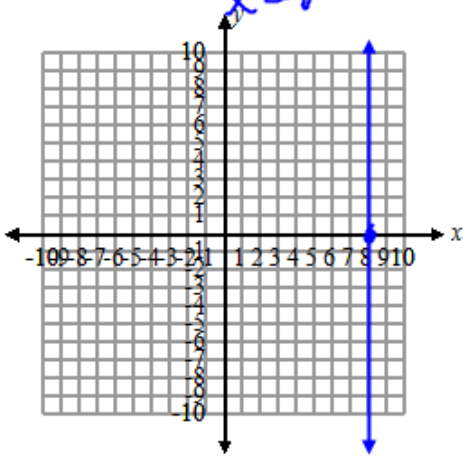
Example #5 Graph the line that has a slope of $\frac{0}{1}$ and a y-intercept of -6.

zero



Example #6 Graph the line that has an undefined slope and an x-intercept of 8.

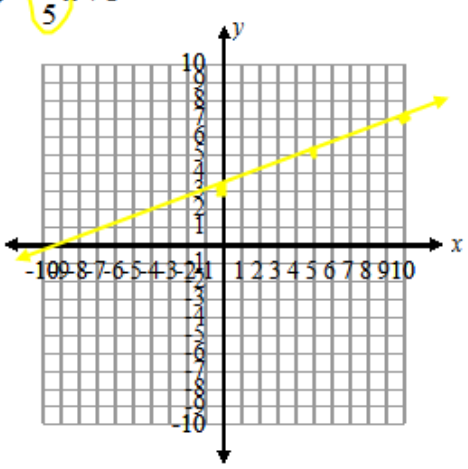
VERTICAL



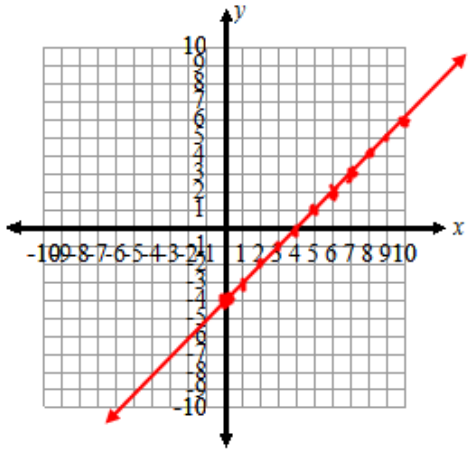
$y = mx + b$ → y-intercept (the # all by itself)
→ Beginning Point
→ Slope (the # in front of the variable)
Domain
Independent

Example #7 Graph the line.

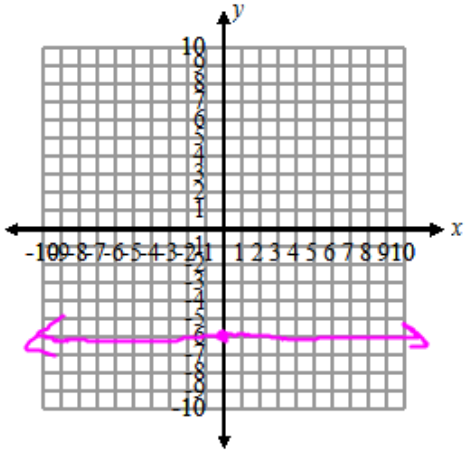
a. $y = \frac{2}{5}x + 3$



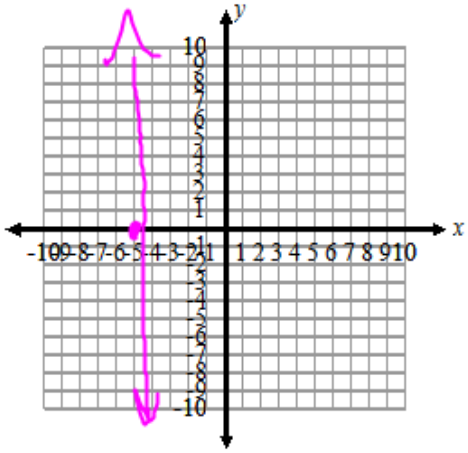
b. $y = |x| - 4$



c. $y = -6$ → $y = 0x - 6$

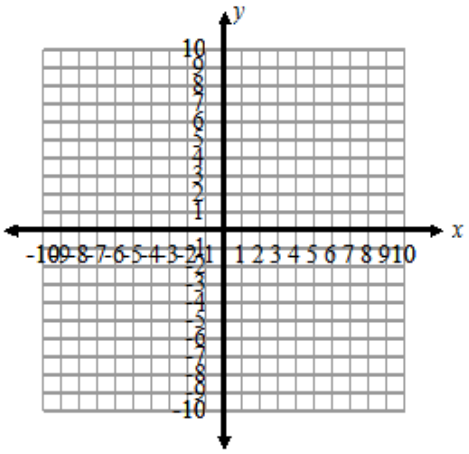


d. $x = -5$

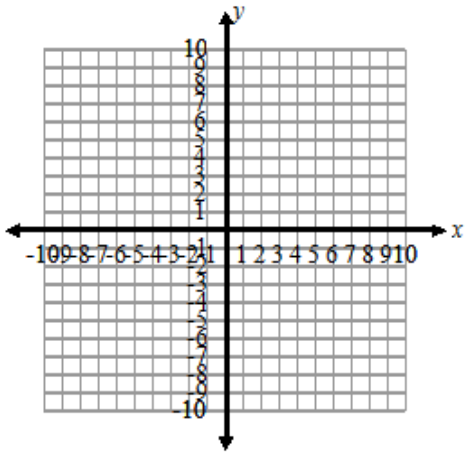


Practice Problems – Graph the line.

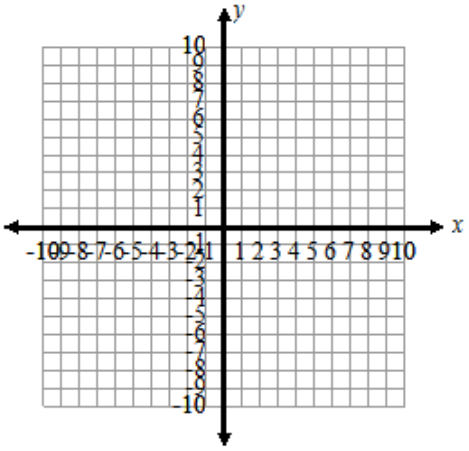
1. $y = -2x - 5$



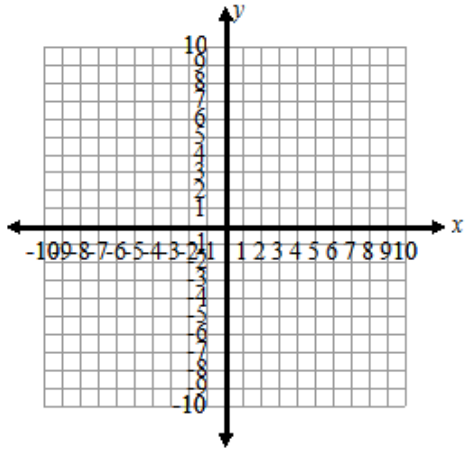
2. $y = \frac{5}{3}x - 6$



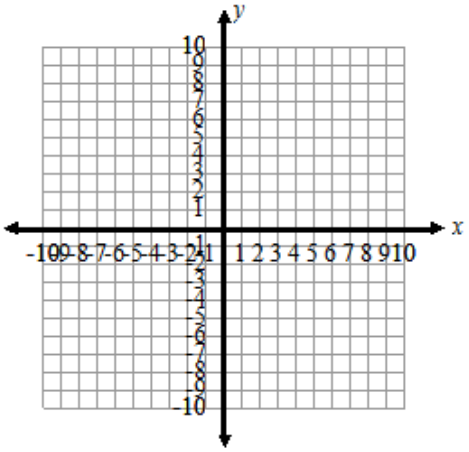
3. $y = \frac{-1}{3}x + 4$



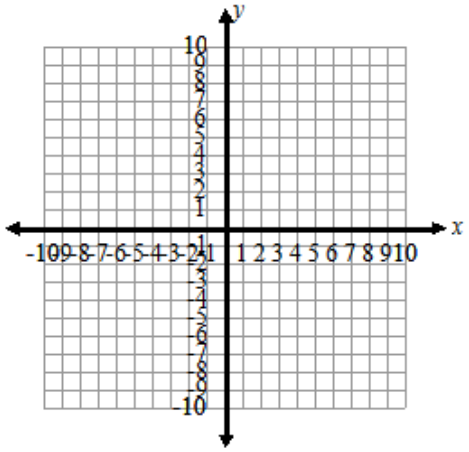
4. $y = \frac{4}{3}x - 7$



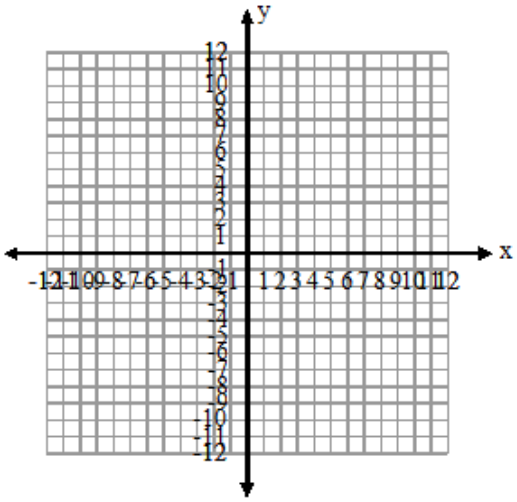
5. $y = 4$



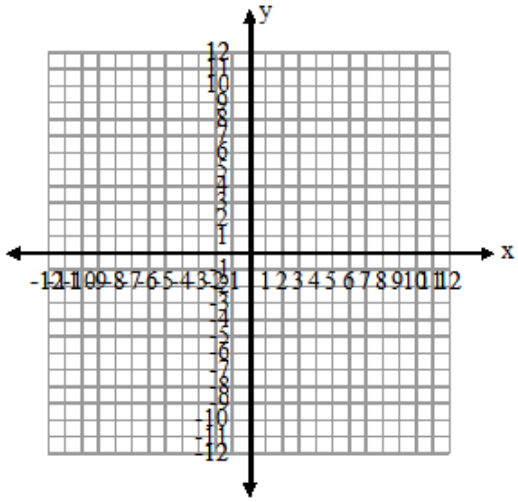
6. $x = -3$



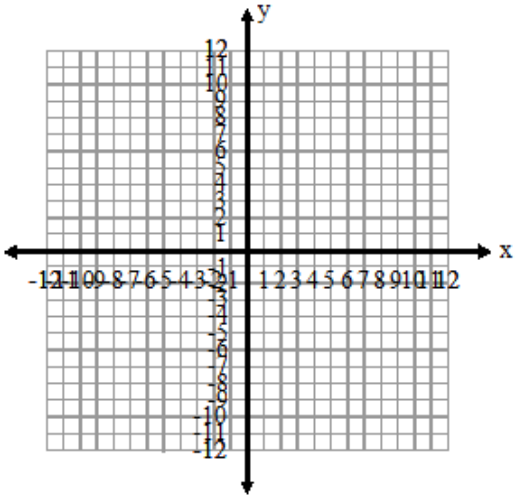
7. $y = 3x$



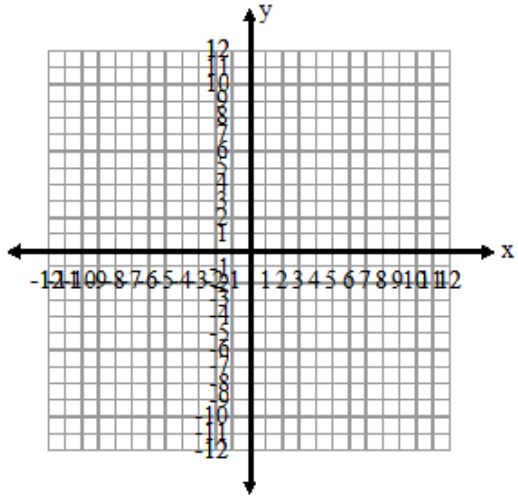
8. $y = \frac{3}{4}x + 1$



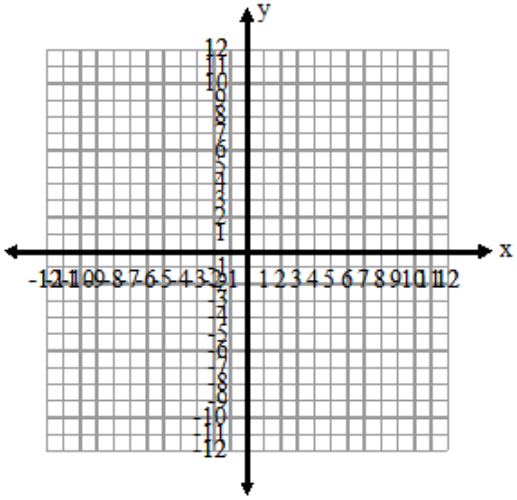
9. $y = \frac{-2}{5}x - 2$



10. $y = -5x$



11. $y = 4x - 11$



12. $y = -6x + 9$