Math 60, Section 4.5 and 4.6 Class Activity Name:_____

Section 4.5 Slope-Intercept Form

Slope and y-intercept in context

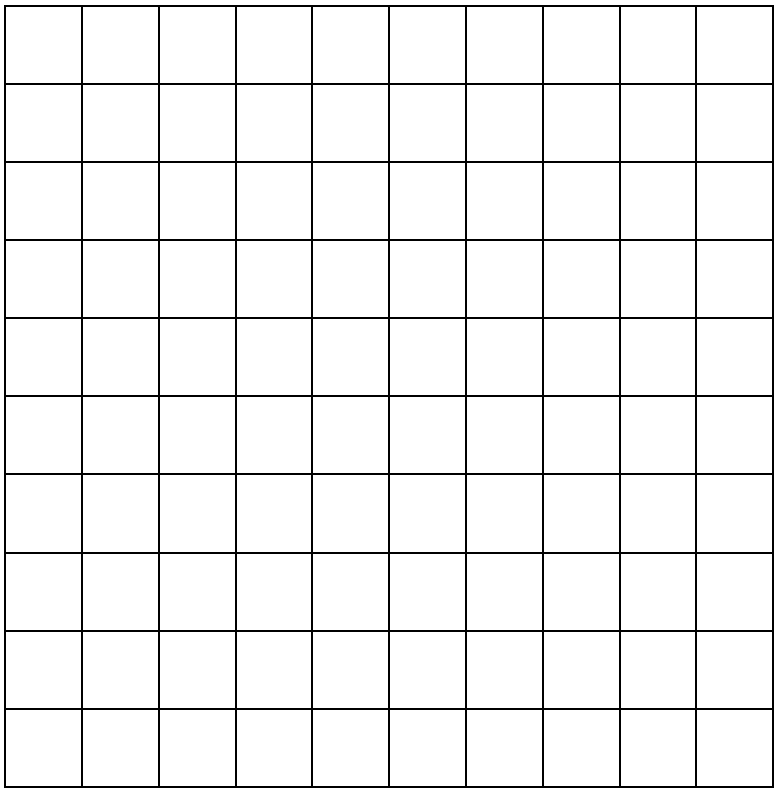
1. The cost to join LA Fitness is $25 per month (rounded from $24.99), plus a $99 initiation fee.
Source: https://www.lafitness.com

a. Write an equation for the total cost, y, in terms of the number of months, x, after joining the gym.

b. What is the rate of change or slope in this context?

c. What is the starting value or y-intercept in this context?

d. Graph this linear equation. Label your axes and scale.



Slope-Intercept Form of a Linear Equation: $y = mx + b$

2. Identify the slope and the y-intercept of each line below.

a. $y = 3x - 1$

b. $y = -9x - \frac{1}{2}$

c. $y = -\frac{1}{8}x + 15$

3. The weight y (in pounds) of a plastic tank holding x gallons of water can be modeled by the equation $y = 8.3454x + 67$. Suppose that a truck will be hauling this plastic tank.

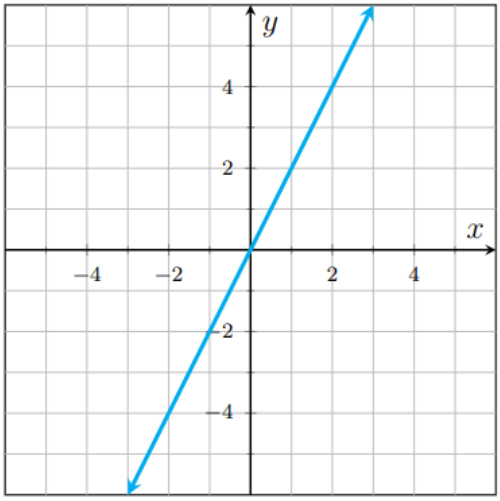
a. What is the slope of this linear equation, with units? Explain what the slope represents in this context.

b. What is the y-intercept of this linear equation? Explain what it represents in this context.

c. If the weight of the tank is $1{,}318.81$ pounds, how many gallons of water are in the tank?

4. Write the equation of each line by finding the slope and y -intercept from the graph.

a.

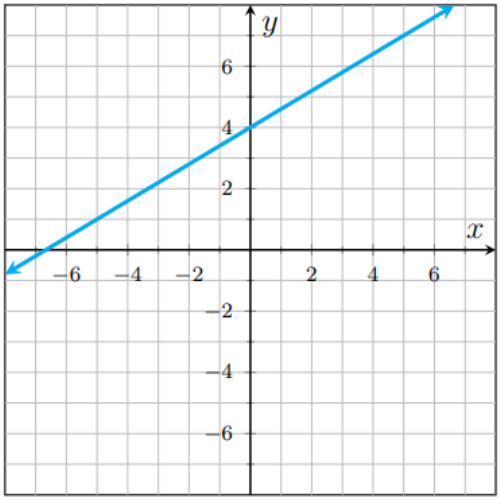


Slope:

y-intercept

Equation:

b.



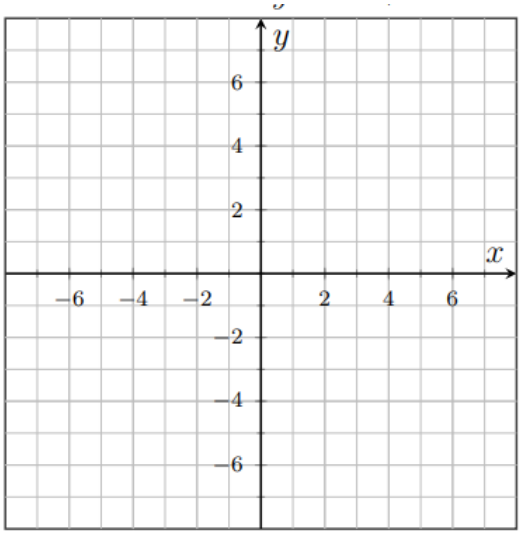
Slope:

y-intercept:

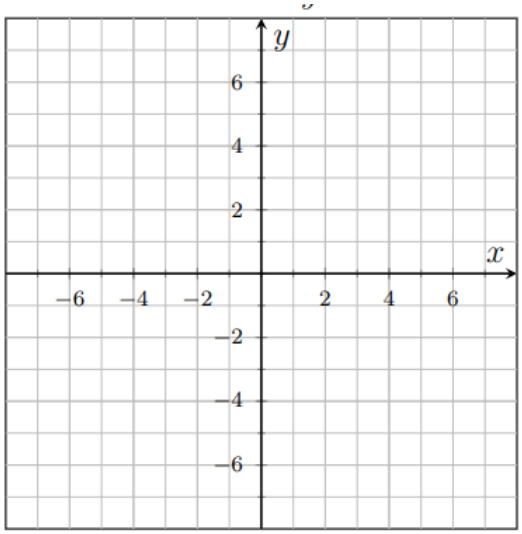
Equation:

5. Graph each equation by plotting the y -intercept and then using the slope to plot additional points.

a. $y = -2x - 3$



b. $y = \frac{1}{4}x + 2$



Section 4.6 Point-Slope Form

The Point-Slope Form of a line with slope m that passes through the point (x_1, y_1) is $y = m(x - x_1) + y_1$

6. Identify the slope and a point that is on each line below.

a. $y = -2(x-3)+1$ b. $y = -\frac{3}{4}(x+5)-6$ c. $y = -7(x+4)+8$

7. Find the equation of the line with a slope of 3 that passes through the point $(1,8)$. Then simplify the equation to slope-intercept form.

8. Find the equation of the line with a slope of $\frac{1}{2}$ that passes through the point $(-2,6)$. Then simplify the equation to slope-intercept form.

9. Find the equation of the line that passes through the points $(-1,-2)$ and $(5,-4)$. First write the equation in point-slope form, then simplify the equation to slope-intercept form.

More Practice

14. Metromile auto insurance charges $30 per month and 3.2 cents per mile (rates may vary).

a. Write a linear equation representing the monthly cost, M, if you drive x miles per month.

b. What is the slope in context?

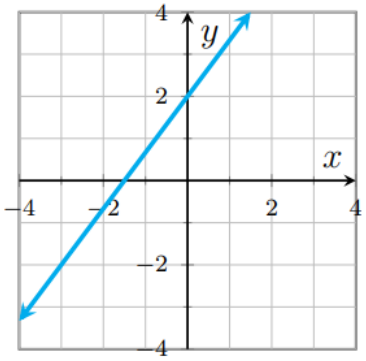
c. What is the M-intercept in context?

d. If you drive 100 miles in a month, how much will you be billed?

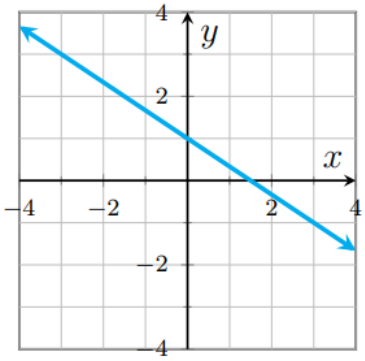
e. If your insurance bill for the month was $43.60, how many miles did you drive?

15. Write the equation for each line in slope-intercept form.

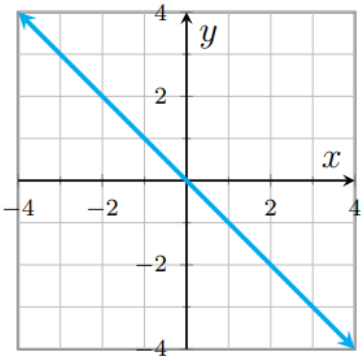
a.



b.

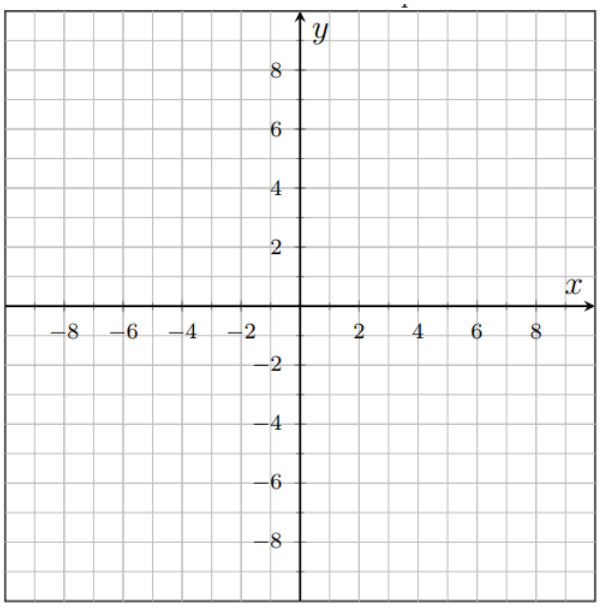


c.

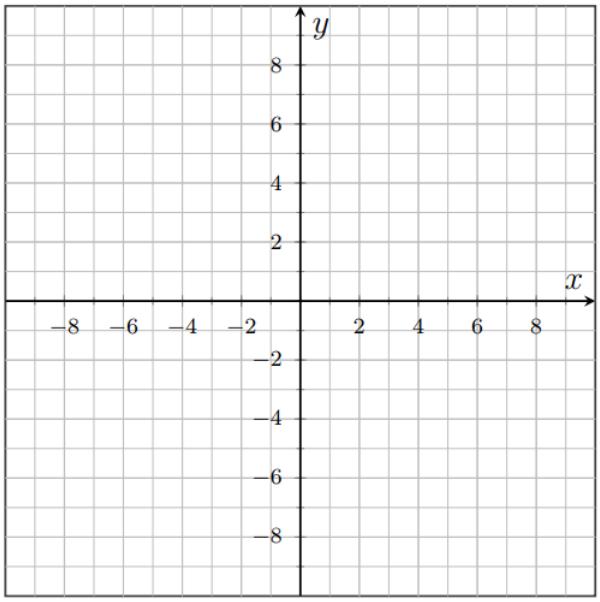


16. Graph each line using the slope and y-intercept.

a. $y = -\frac{1}{4}x - 2$



b. $y = 4x - 5$



17. Find the equation of a line with a slope of 7 that passes through the point $(10,5)$. Then simplify the equation to point-slope form.

18. Find the equation of the line that passes through the points $(-2,-10)$ and $(1,8)$. First write the equation in point-slope form, then simplify the equation to slope-intercept form.

19. Find the equation of the line that passes through the points $(2,3)$ and $(7,9)$. First write the equation in point-slope form, then simplify the equation to slope-intercept form.

20. A company set aside a certain amount of money in the year 2000. The company spent the same amount from that fund each year on perks for its employees. In 2003, there was still $490,000 in the fund. In 2007 there was $318,000 left in the fund.

a. Write an equation for the amount of money in the fund, y, in year x.

b. How much is the company spending each year from this fund?

c. How much money did they start with in the fund?

d. In the year 2011, how much was left in the fund?

e. If they continue the same trend, in which year will the fund run out?