3.4 EXERCISES

PRACTICE

Determine the slope of the line passing through the specified points. See Example 1.

1. $(0, -3)$ and $(-2, 5)$
2. $(-3, 2)$ and $(7, -10)$
3. $(4, 5)$ and $(-1, 5)$
4. $(3, -1)$ and $(-7, -1)$
5. $(3, -5)$ and $(3, 2)$
6. $(0, 0)$ and $(-2, 5)$
7. $(-2, 1)$ and $(-5, -1)$
8. $\left(\frac{1}{2}, -7\right)$ and $\left(\frac{3}{4}, -5\right)$
9. $\left(10, \frac{1}{5}\right)$ and $\left(4, -\frac{4}{5}\right)$
10. $(-2, 4)$ and $(6, 9)$
11. $(0, -21)$ and $(-3, 0)$
12. $(-3, -5)$ and $(-2, 8)$
13. $\left(\frac{1}{3}, 9\right)$ and $(2, 4)$
14. $(29, -17)$ and $(31, -29)$
15. $(7, 4)$ and $(-6, 13)$

Determine the slopes of the lines defined by the following equations. See Example 2.

16. $8x - 2y = 11$
17. $2x + 8y = 11$
18. $12x - 4y = -9$
19. $4y = 13$
20. $\frac{x - y}{3} + 2 = 4$
21. $7x = 2$
22. $3y - 2 = \frac{x}{5}$
23. $3 - y = 2(5 - x)$
24. $3(2y - 1) = 5(2 - x)$
25. $\frac{x + 2}{3} + 2(1 - y) = -2x$
26. $2y - 7x = 4y + 5x$
27. $x - 7 = \frac{2y - 1}{-5}$

Use the slope-intercept form to graph the equations. See Example 3.

28. $6x - 2y = 4$
29. $3y + 2x - 9 = 0$
30. $5y - 15 = 0$
31. $x + 4y = 20$
32. $\frac{x - y}{2} = -1$
33. $3x + 7y = 8y - x$
34. $-4x - 4y = 8$
35. $-5x + 3y + 16 = 0$
36. $3x = 3y - 21$

Find the equation, in slope-intercept form, of the line with the given *y*-intercept and slope. See Example 4.

37. y-intercept $(0, -3)$; slope of $\frac{3}{4}$

38. y-intercept $(0, 5)$; slope of -3

39. y-intercept $(0, -7)$; slope of $-\frac{5}{2}$

40. y-intercept $(0, 6)$; slope of 4

41. y-intercept $(0, -9)$; slope of -5

42. y-intercept $(0, 2)$; slope of $\frac{1}{2}$

Find the equation, in standard form, of the line passing through the given point with the given slope.

43. point $(-1, -3)$; slope of $\frac{3}{2}$

44. point $(6, 0)$; slope of $\frac{5}{4}$

45. point $(-3, 5)$; slope of 0

46. point $(-2, -13)$; undefined slope

47. point $(3, -1)$; slope of 10

48. point $(-1, 3)$; slope of $-\frac{2}{7}$

49. point $(5, 11)$; slope of -3

50. point $(5, -9)$; slope of $-\frac{1}{2}$

Find the equation, in standard form, of the line passing through the specified points.

51. $(-1, 3)$ and $(2, -1)$

52. $(1, 3)$ and $(-2, 3)$

53. $(2, -2)$ and $(2, 17)$

54. $(-9, 2)$ and $(1, 5)$

55. $(3, -1)$ and $(8, -1)$

56. $\left(\frac{4}{3}, 1\right)$ and $\left(\frac{2}{5}, \frac{3}{7}\right)$

57. $(-2, 8)$ and $(5, 6)$

58. $(8, -10)$ and $(8, 0)$

59. $(7, 5)$ and $(-9, 5)$

60. $(7, 7)$ and $(9, -8)$

61. $\left(\frac{2}{3}, \frac{5}{4}\right)$ and $\left(\frac{3}{5}, \frac{9}{8}\right)$

62. $(-5, -5)$ and $(10, -11)$

Match each equation or description to the correct graph.

63. $-3x - 2y = 17$

64. $-4y + 10 = -4x$

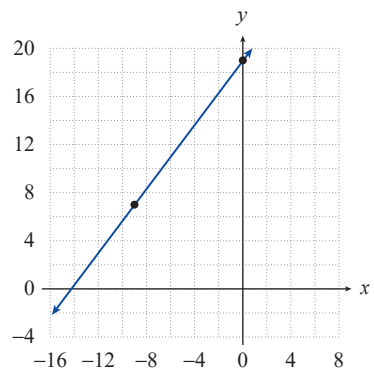
65. $-6y + 9 = \dfrac{x}{-2}$

66. point $(-9, 7)$; slope $\dfrac{4}{3}$

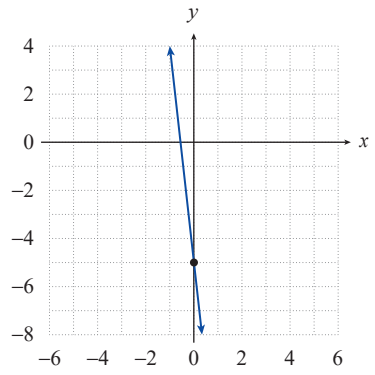
67. point $(-2, 4)$; slope -2

68. point $(0, -5)$; slope -9

a.



b.



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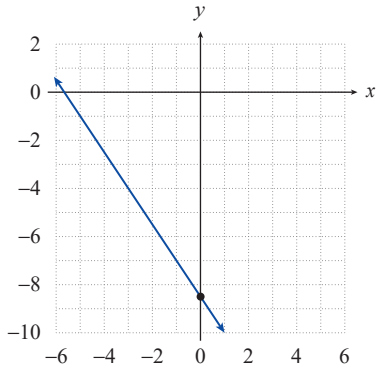

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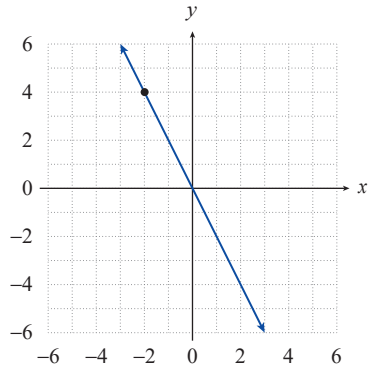

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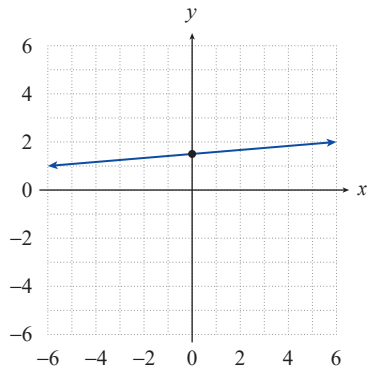
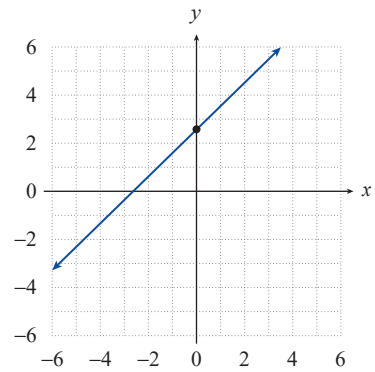


f.



APPLICATIONS

69. A bottle manufacturer has determined that the total cost (C) in dollars of producing x bottles is $C = 0.25x + 2100$.

a. What is the cost of producing 500 bottles?
b. What are the fixed costs (costs incurred even when 0 bottles are produced)?
c. What is the increase in cost for each bottle produced?

70. Sales at Glover's Golf Emporium have been increasing linearly for the past couple of years. Last year, sales were \$163,000. This year, sales were \$215,000. If sales continue to increase at this linear rate, predict the sales for next year.

71. Amy owns stock in a company. If the stock had a value of \$2500 in 2018 when she purchased it, what has been the average change in value per year if in 2020 the stock was worth \$3150?

72. For tax and accounting purposes, businesses often have to depreciate equipment values over time. One method of depreciation is the straight-line method. Three years ago Hilde Construction purchased a bulldozer for \$51,500. Using the straight-line method, the bulldozer has now depreciated to a value of \$43,200. If V equals the value at the end of year t, write a linear equation expressing the value of the bulldozer over time. How many years from the purchase date will the value equal \$0? Round your answer to two decimal places.