

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. $-3x - 2y = 17$

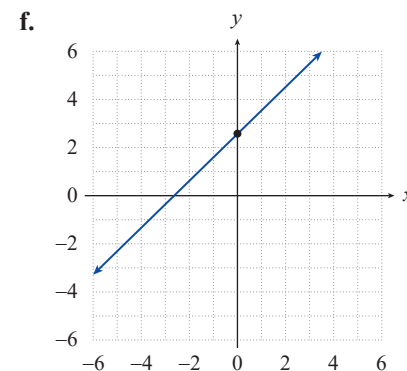
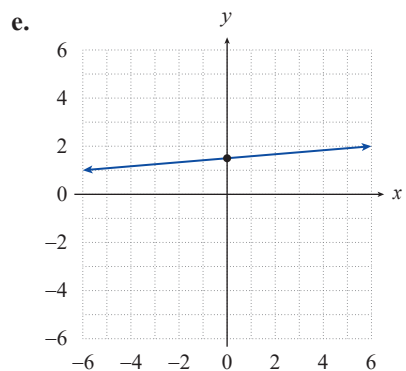
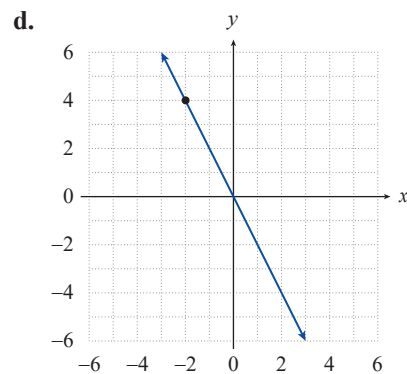
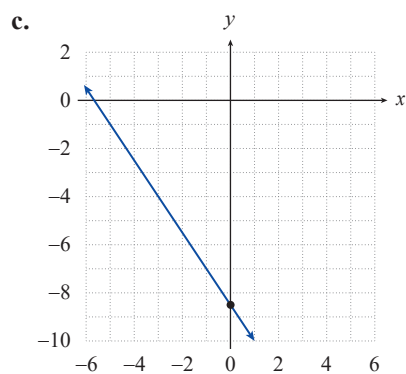
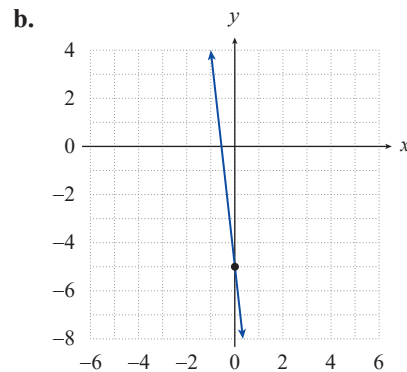
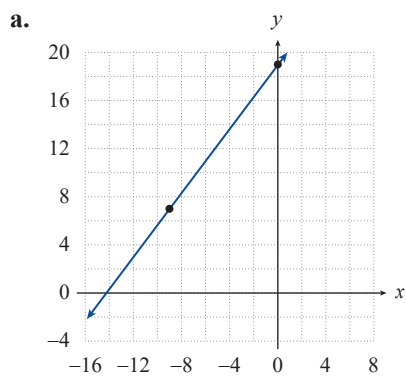
65. $-6y + 9 = \frac{x}{-2}$

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

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

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

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



 APPLICATIONS

69. A bottle manufacturer has determined that the total cost (C) in dollars of producing x bottles is $C = 0.25x + 2100$.
- What is the cost of producing 500 bottles?
 - What are the fixed costs (costs incurred even when 0 bottles are produced)?
 - 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.