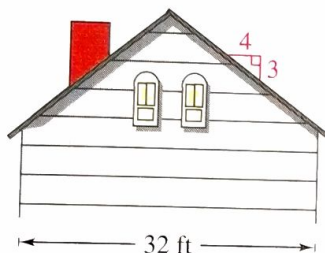


**33. Mountain Driving** When driving down a mountain road, you notice warning signs indicating that it is a “12% grade.” This means that the slope of the road is  $-\frac{12}{100}$ . Approximate the amount of horizontal change in your position if you note from elevation markers that you have descended 2000 feet vertically.

**34. Attic Height** The “rise to run” in determining the steepness of the roof on a house is 3 to 4. Determine the maximum height in the attic of the house if the house is 32 feet wide (see figure).



In Exercises 35–40, find the slope and  $y$ -intercept (if possible) of the equation of the line. Sketch a graph of the line.

35.  $5x - y + 3 = 0$                       36.  $2x + 3y - 9 = 0$   
 37.  $5x - 2 = 0$                             38.  $3y + 5 = 0$   
 39.  $7x + 6y - 30 = 0$                   40.  $x - y - 10 = 0$

In Exercises 41–48, find an equation of the line passing through the points and sketch a graph of the line.

41.  $(5, -1), (-5, 5)$                       42.  $(4, 3), (-4, -4)$   
 43.  $(2, \frac{1}{2}), (\frac{1}{2}, \frac{5}{4})$                       44.  $(-1, 4), (6, 4)$   
 45.  $(-8, 1), (-8, 7)$                       46.  $(1, 1), (6, -\frac{2}{3})$   
 47.  $(1, 0.6), (-2, -0.6)$   
 48.  $(-8, 0.6), (2, -2.4)$

In Exercises 49–58, find an equation of the line that passes through the given point and has the indicated slope. Sketch a graph of the line.

- | Point         | Slope    |
|---------------|----------|
| 49. $(0, -2)$ | $m = 3$  |
| 50. $(0, 10)$ | $m = -1$ |

- | Point                             | Slope              |
|-----------------------------------|--------------------|
| 51. $(-3, 6)$                     | $m = -2$           |
| 52. $(0, 0)$                      | $m = 4$            |
| 53. $(4, 0)$                      | $m = -\frac{1}{3}$ |
| 54. $(-2, -5)$                    | $m = \frac{3}{4}$  |
| 55. $(6, -1)$                     | $m$ is undefined.  |
| 56. $(-10, 4)$                    | $m = 0$            |
| 57. $(4, \frac{5}{2})$            | $m = \frac{4}{3}$  |
| 58. $(-\frac{1}{2}, \frac{3}{2})$ | $m = -3$           |

In Exercises 59–64, use the intercept form to find the equation of the line with the given intercepts. The intercept form of the equation of a line with intercepts  $(a, 0)$  and  $(0, b)$  is

$$\frac{x}{a} + \frac{y}{b} = 1, \quad a \neq 0, b \neq 0.$$

59.  $x$ -intercept:  $(2, 0)$                       60.  $x$ -intercept:  $(-3, 0)$   
        $y$ -intercept:  $(0, 3)$                        $y$ -intercept:  $(0, 4)$   
 61.  $x$ -intercept:  $(-\frac{1}{6}, 0)$                       62.  $x$ -intercept:  $(\frac{2}{3}, 0)$   
        $y$ -intercept:  $(0, -\frac{2}{3})$                        $y$ -intercept:  $(0, -2)$   
 63. Point on line:  $(1, 2)$   
        $x$ -intercept:  $(a, 0)$   
        $y$ -intercept:  $(0, a), a \neq 0$   
 64. Point on line:  $(-3, 4)$   
        $x$ -intercept:  $(a, 0)$   
        $y$ -intercept:  $(0, a), a \neq 0$

In Exercises 65–70, write equations of the lines through the given point (a) parallel to the given line and (b) perpendicular to the given line.

- | Point                            | Line          |
|----------------------------------|---------------|
| 65. $(2, 1)$                     | $4x - 2y = 3$ |
| 66. $(-3, 2)$                    | $x + y = 7$   |
| 67. $(-6, 4)$                    | $3x + 4y = 7$ |
| 68. $(\frac{7}{8}, \frac{3}{4})$ | $5x + 3y = 0$ |
| 69. $(-1, 0)$                    | $y = -3$      |
| 70. $(2, 5)$                     | $x = 4$       |