3-4 Practice

Equations of Lines

Write an equation in slope-intercept form of the line having the given slope and y-intercept.

1. \( m = \frac{2}{3}, \text{y-intercept:} -10 \)
   \[ y = \frac{2}{3}x - 10 \]

2. \( m = -\frac{7}{9}, (0, -\frac{1}{2}) \)
   \[ y = -\frac{7}{9}x - \frac{1}{2} \]

3. \( m = 4.5, (0, 0.25) \)
   \[ y = 4.5x + 0.25 \]

Write equations in point-slope form and slope-intercept form of the line having the given slope and containing the given point.

4. \( m = \frac{3}{2}, (4, 6) \)
   \[ y - 6 = \frac{3}{2}(x - 4) \]
   \[ y = \frac{3}{2}x \]

5. \( m = -\frac{6}{5}, (-5, -2) \)
   \[ y + 2 = -\frac{6}{5}(x + 5) \]

6. \( m = 0.5, (7, -3) \)
   \[ y + 3 = \frac{1}{2}(x - 7) \]
   \[ y = \frac{1}{2}x - \frac{13}{2} \]

7. \( m = -1.3, (-4, 4) \)
   \[ y - 4 = -1.3(x + 4) \]
   \[ y = -1.3x - 1.2 \]

Write an equation in slope-intercept form for each line.

8. \( b \)
   \[ y = -x - 5 \]

9. \( c \)
   \[ y = \frac{2}{5}x + 4 \]

10. Parallel to line \( b \), contains \((3, -2)\)
    \[ y + 2 = -(x - 3) \]
    \[ y = x + 1 \]

11. Perpendicular to line \( c \), contains \((-2, -4)\)
    \[ y + 4 = \frac{5}{2}(x + 2) \]
    \[ y = \frac{5}{2}x + 1 \]

Write an equation in slope-intercept form for the line that satisfies the given conditions.

12. \( m = -\frac{4}{9}, \text{y-intercept = 2} \)
    \[ y = -\frac{4}{9}x + 2 \]

13. \( m = 3, \text{contains} (2, -3) \)
    \[ y + 3 = 3(x - 2) \]
    \[ y = 3x - 9 \]

14. \( x\)-intercept is -6, \( y\)-intercept is 2
    \[ (-6, 0) \]
    \[ m = \frac{\frac{2}{0}}{-6} = \frac{2}{3} \]
    \[ y = \frac{2}{3}x + \frac{1}{2} \]

15. \( x\)-intercept is 2, \( y\)-intercept is -5
    \[ (2, 0) \]
    \[ m = \frac{-\frac{5}{2}}{2} = \frac{5}{4} \]
    \[ y = \frac{5}{4}x - \frac{1}{2} \]

16. Passes through \((2, -4)\) and \((5, 8)\)
    \[ m = \frac{8 - (-4)}{5 - 2} = \frac{12}{3} = 4 \]
    \[ y = 4x + 2 \]

17. Contains \((-4, 2)\) and \((8, -1)\)
    \[ m = \frac{-1 - 2}{8 - (-4)} = \frac{-3}{12} = -\frac{1}{4} \]
    \[ y = -\frac{1}{4}x + \frac{1}{2} \]

18. Community Education A local community center offers self-defense classes for teens. A $25 enrollment fee covers supplies and materials and open classes cost $10 each. Write an equation to represent the total cost of \( x \) self-defense classes at the community center.

\[ y = 10x + 25 \]