Activity 1.6.2: Finding the Equation of a Line Given the Slope and a Point or Two Points

Total points = 81

A. Answers

1. $m = -2$; (3, 0)
$y - y_1 = m(x - x_1)$ ✓
$y - 0 = -2(x - 3)$ ✓
$y = -2x + 6$ ✓

2. $m = 4$; $(-2, 7)$
$y - y_1 = m(x - x_1)$ ✓
$y - 7 = 4(x - (-2))$ ✓
$y - 7 = 4(x + 2)$ ✓
$y - 7 = 4x + 8$ ✓
$y - 7 + 7 = 4x + 8 + 7$ ✓
$y = 4x + 15$ ✓

3. $m = 3$; (6, 4)
$y - y_1 = m(x - x_1)$ ✓
$y - 4 = 3(x - 6)$ ✓
$y - 4 = 3x - 18$ ✓
$y - 4 + 4 = 3x - 18 + 4$ ✓
$y = 3x - 14$ ✓

4. $m = \frac{3}{2}$; (1, 7)
$y - y_1 = m(x - x_1)$ ✓
$y - 7 = \frac{3}{2}(x - 1)$ ✓
$y - 7 = \frac{3}{2}x - \frac{3}{2}$ ✓
$y - 7 + 7 = \frac{3}{2}x - \frac{3}{2} + 7$ ✓
$y = \frac{3}{2}x + \frac{11}{2}$ ✓

5. $m = -\frac{3}{4}$; $(-1, 6)$
$y - y_1 = m(x - x_1)$ ✓
$y - 6 = -\frac{3}{4}(x - (-1))$ ✓
$y - 6 = -\frac{3}{4}(x + 1)$ ✓
$y - 6 = -\frac{3}{4}x - \frac{3}{4}$ ✓
$y - 6 + 6 = -\frac{3}{4}x - \frac{3}{4} + 6$ ✓
$y = -\frac{3}{4}x + \frac{21}{4}$ ✓

B. Answers

1. (2, 3) and (5, 8)
$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$ ✓
$y - 3 = \frac{8 - 3}{5 - 2}(x - 2)$ ✓
$y - 3 = \frac{5}{3}(x - 2)$ ✓
$y - 3 = \frac{5}{3}x - \frac{10}{3}$ ✓
$y - 3 + 3 = \frac{5}{3}x - \frac{10}{3} + 3$ ✓
$y = \frac{5}{3}x - \frac{1}{3}$ ✓

2. (2, -3) and (6, -3)
$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$ ✓
$y - (-3) = \frac{-3 - (-3)}{6 - 2}(x - 2)$ ✓
$y + 3 = \frac{0}{4}(x - 2)$ ✓
$y + 3 = 0(x - 2)$ ✓
$y + 3 - 3 = 0 - 3$ ✓
$y = -3$ ✓

3. (-2, 9) and (0, 10)
$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$ ✓
$y - 9 = \frac{10 - 9}{0 - (-2)}(x - (-2))$ ✓
$y - 9 = \frac{1}{2}(x + 2)$ ✓
$y - 9 = \frac{1}{2}x + 1$ ✓
$y - 9 + 9 = \frac{1}{2}x + 1 + 9$ ✓
$y = \frac{1}{2}x + 10$ ✓

4. $\left(\frac{1}{2}, 2\right)$ and $\left(-\frac{3}{2}, 1\right)$
$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$ ✓
$y - 2 = \frac{1 - 2}{-\frac{3}{2} - \frac{1}{2}}(x - \frac{1}{2})$ ✓
$y - 2 = \frac{-1}{-2}(x - \frac{1}{2})$ ✓
$y - 2 = \frac{1}{2}x - \frac{1}{4}$ ✓
$y - 2 + 2 = \frac{1}{2}x - \frac{1}{4} + 2$ ✓
$y = \frac{1}{2}x + \frac{7}{4}$ ✓

5. $\left(-\frac{1}{3}, \frac{3}{2}\right)$ and $(1, 2)$
$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$ ✓
$y - \frac{3}{2} = \frac{2 - \frac{3}{2}}{1 - (-\frac{1}{3})}(x - (-\frac{1}{3}))$ ✓
$y - \frac{3}{2} = \frac{\frac{1}{2}}{1 + \frac{1}{3}}(x + \frac{1}{3})$ ✓
$y - \frac{3}{2} = \frac{\frac{1}{2}}{\frac{4}{3}}(x + \frac{1}{3})$ ✓
$y - \frac{3}{2} = \frac{3}{8}(x + \frac{1}{3})$ ✓
$y - \frac{3}{2} = \frac{3}{8}x + \frac{1}{8}$ ✓
$y - \frac{3}{2} + \frac{3}{2} = \frac{3}{8}x + \frac{1}{8} + \frac{3}{2}$ ✓
$y = \frac{3}{8}x + \frac{13}{8}$ ✓

C. Answers

1. $a = 1$; $b = 5$
(1, 0); (0, 5) ✓
$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$ ✓
$y - 0 = \frac{5 - 0}{0 - 1}(x - 1)$ ✓
$y = \frac{5}{-1}(x - 1)$ ✓
$y = -5(x - 1)$ ✓
$y = -5x + 5$ ✓

2. $a = 3$; $b = -4$
(3, 0); (0, −4) ✓
$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$ ✓
$y - 0 = \frac{-4 - 0}{0 - 3}(x - 3)$ ✓
$y = \frac{-4}{-3}(x - 3)$ ✓
$y = \frac{4}{3}x - 4$ ✓

3. (3, 0); (0, 3)
$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$ ✓
$y - 0 = \frac{3 - 0}{0 - 3}(x - 3)$ ✓
$y = \frac{3}{-3}(x - 3)$ ✓
$y = -(x - 1)$ ✓
$y = -x + 1$ ✓

4. (−5, 0); (0, −4)
$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$ ✓
$y - 0 = \frac{-4 - 0}{0 - (-5)}(x - (-5))$ ✓
$y = \frac{-4}{5}(x + 5)$ ✓
$y = -\frac{4}{5}x - 4$ ✓

5. (−6, 0); (0, 2)
$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$ ✓
$y - 0 = \frac{2 - 0}{0 - (-6)}(x - (-6))$ ✓
$y = \frac{2}{6}(x + 6)$ ✓
$y = \frac{1}{3}x + 2$ ✓

Typeset by Jonathan Rufo Bacolod using LaTeX

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$y = \frac{1}{2}x + \frac{7}{4}$ ✓

5. $\left(-\frac{1}{3}, \frac{3}{2}\right)$ and $(1, 2)$
$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$ ✓
$y - \frac{3}{2} = \frac{2 - \frac{3}{2}}{1 - (-\frac{1}{3})}(x - (-\frac{1}{3}))$ ✓
$y - \frac{3}{2} = \frac{\frac{1}{2}}{1 + \frac{1}{3}}(x + \frac{1}{3})$ ✓
$y - \frac{3}{2} = \frac{\frac{1}{2}}{\frac{4}{3}}(x + \frac{1}{3})$ ✓
$y - \frac{3}{2} = \frac{3}{8}(x + \frac{1}{3})$ ✓
$y - \frac{3}{2} = \frac{3}{8}x + \frac{1}{8}$ ✓
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