

Write the Equation of the Line: Given two points

Date _____

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Write the slope-intercept form of the equation of the line through the given points.

1) through: (0, 3) and (-4, -1)

$$m = \frac{3 - (-1)}{0 - (-4)} = \frac{4}{4} = 1$$

$$y = x + b$$

$$y = x + 3$$

$$3 = 0 + b$$

$$3 = b$$

2) through: (0, 2) and (1, -3)

$$m = \frac{-3 - 2}{1 - 0} = \frac{-5}{1} = -5$$

$$y = -5x + b$$

$$2 = -5(0) + b$$

$$2 = 0 + b$$

$$2 = b$$

$$y = -5x + 2$$

3) through: (-4, 0) and (1, 5)

$$m = \frac{5 - 0}{1 - (-4)} = \frac{5}{5} = 1$$

$$y = x + b$$

$$y = x + 4$$

$$0 = -4 + b$$

$$4 = b$$

4) through: (-4, -2) and (-3, 5)

$$m = \frac{5 - (-2)}{-3 - (-4)} = \frac{7}{1} = 7$$

$$y = 7x + b$$

$$2b = b$$

$$5 = 7(-3) + b$$

$$5 = -21 + b$$

$$y = 7x + 26$$

5) through: (5, 4) and (-4, 3)

$$m = \frac{3 - 4}{-4 - 5} = \frac{-1}{-9} = \frac{1}{9}$$

$$y = \frac{1}{9}x + b$$

$$\frac{3}{9} - \frac{5}{9} = b$$

$$4 = \frac{1}{9}(5) + b$$

$$\frac{3}{9} = b$$

$$4 = \frac{5}{9} + b$$

$$y = \frac{1}{9}x + \frac{31}{9}$$

7) through: (5, -2) and (-4, -3)

$$m = \frac{-3 - (-2)}{-4 - 5} = \frac{-1}{-9} = \frac{1}{9}$$

$$y = \frac{1}{9}x + b$$

$$b = \frac{-23}{9}$$

$$-2 = \frac{1}{9}(5) + b$$

$$y = \frac{1}{9}x - \frac{23}{9}$$

$$-2 = \frac{5}{9} + b$$

6) through: (-4, 2) and (0, -5)

$$m = \frac{-5 - 2}{0 - (-4)} = \frac{-7}{4}$$

$$y = -\frac{7}{4}x + b$$

$$b = -5$$

$$2 = -\frac{7}{4}(-4) + b$$

$$y = -\frac{7}{4}x - 5$$

$$2 = 7 + b$$

8) through: (-4, 5) and (5, -5)

$$m = \frac{-5 - 5}{5 - (-4)} = \frac{-10}{9}$$

$$y = -\frac{10}{9}x + b$$

$$b = \frac{5}{9}$$

$$5 = -\frac{10}{9}(-4) + b$$

$$y = -\frac{10}{9}x + \frac{5}{9}$$

$$\frac{45}{9} - \frac{40}{9} = 5 = \frac{40}{9} + b$$

9) through: (0, -2) and (-5, 3)

$$m = \frac{3 - (-2)}{-5 - 0} = \frac{5}{-5} = -1$$

$$y = -x + b$$

$$y = -x - 2$$

$$-2 = 0 + b$$

$$-2 = b$$

10) through: (4, -2) and (-4, -4)

$$m = \frac{-4 - (-2)}{-4 - 4} = \frac{-2}{-8} = \frac{1}{4}$$

$$y = \frac{1}{4}x + b$$

$$-2 = \frac{1}{4}(4) + b$$

$$y = \frac{1}{4}x - 3$$

$$-2 = 1 + b$$

$$-3 = b$$

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Write the slope-intercept form of the equation of the line through the given points.

1) through: $(-5, -2)$ and $(3, -1)$

$$m = \frac{-1 - (-2)}{3 - (-5)} = \frac{1}{8}$$

$$y = \frac{1}{8}x + b$$

$$-1 = \frac{1}{8}(3) + b \quad b = -\frac{11}{8}$$

$$-1 = \frac{3}{8} + b$$

$$y = \frac{1}{8}x - \frac{11}{8}$$

3) through: $(5, 1)$ and $(-5, 3)$

$$m = \frac{3 - 1}{-5 - 5} = \frac{2}{-10} = -\frac{1}{5}$$

$$y = -\frac{1}{5}x + b$$

$$1 = -\frac{1}{5}(5) + b$$

$$1 = -1 + b$$

$$2 = b$$

$$y = -\frac{1}{5}x + 2$$

5) through: $(-2, 2)$ and $(-5, -4)$

$$m = \frac{2 - (-4)}{-2 - (-5)} = \frac{6}{3} = 2$$

$$y = 2x + b$$

$$2 = 2(-2) + b$$

$$2 = -4 + b$$

$$6 = b$$

$$y = 2x + 6$$

7) through: $(2, 2)$ and $(-5, -1)$

$$m = \frac{2 - (-1)}{2 - (-5)} = \frac{3}{7}$$

$$y = \frac{3}{7}x + b$$

$$2 = \frac{3}{7}(2) + b$$

$$2 = \frac{6}{7} + b$$

$$b = \frac{8}{7}$$

$$y = \frac{3}{7}x + \frac{8}{7}$$

9) through: $(5, 5)$ and $(4, -5)$

$$m = \frac{5 - (-5)}{5 - 4} = \frac{10}{1} = 10$$

$$y = 10x + b$$

$$5 = 10(5) + b$$

$$5 = 50 + b$$

$$-45 = b$$

$$y = 10x - 45$$

2) through: $(-5, -1)$ and $(1, -4)$

$$m = \frac{-4 - (-1)}{1 - (-5)} = \frac{-3}{6} = -\frac{1}{2}$$

$$y = -\frac{1}{2}x + b$$

$$-3\frac{1}{2} = b$$

$$-4 = -\frac{1}{2}(1) + b$$

$$-\frac{7}{2} = b$$

$$-4 = -\frac{1}{2} + b$$

$$y = -\frac{1}{2}x - \frac{7}{2}$$

4) through: $(-1, 0)$ and $(5, 5)$

$$m = \frac{5 - 0}{5 - (-1)} = \frac{5}{6}$$

$$y = \frac{5}{6}x + b$$

$$0 = \frac{5}{6}(-1) + b$$

$$0 = -\frac{5}{6} + b$$

$$b = \frac{5}{6}$$

$$y = \frac{5}{6}x + \frac{5}{6}$$

6) through: $(5, 3)$ and $(4, 5)$

$$m = \frac{5 - 3}{4 - 5} = \frac{2}{-1} = -2$$

$$y = -2x + b$$

$$5 = -2(4) + b$$

$$5 = -8 + b$$

$$13 = b$$

$$y = -2x + 13$$

8) through: $(-3, 5)$ and $(-3, 4)$

$$m = \frac{4 - 5}{-3 - (-3)} = \frac{-1}{0} \text{ undef!}$$

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$$x = -3$$

10) through: $(5, 1)$ and $(1, 3)$

$$m = \frac{3 - 1}{1 - 5} = \frac{2}{-4} = -\frac{1}{2}$$

$$y = -\frac{1}{2}x + b$$

$$3 = -\frac{1}{2}(1) + b$$

$$3 = -\frac{1}{2} + b$$

$$3\frac{1}{2} = b$$

$$\frac{7}{2} = b$$

$$y = -\frac{1}{2}x + \frac{7}{2}$$