

MFM2P – Equations of Lines – Day 9: Determining Equations Extra Practice

Determine the equation of the line through the given points.

<p>A (0, 8) B (2, 0) x_1, y_1, x_2, y_2</p> <p>$m = \frac{y_2 - y_1}{x_2 - x_1}$</p> <p>$m = \frac{0 - 8}{2 - 0}$</p> <p>$m = \frac{-8}{2}$</p> <p>$m = -4$</p> <p>$y = mx + b$ use point ①</p> <p>$8 = (-4)(0) + b$</p> <p>$8 = 0 + b$</p> <p>$8 = b$</p> <p>$y = -4x + 8$</p>	<p>C (1, 3) D (3, 7) x_1, y_1, x_2, y_2</p> <p>$m = \frac{y_2 - y_1}{x_2 - x_1}$</p> <p>$m = \frac{7 - 3}{3 - 1}$</p> <p>$m = \frac{4}{2}$</p> <p>$m = 2$</p> <p>$y = mx + b$ use point ②</p> <p>$7 = (2)(3) + b$</p> <p>$7 = 6 + b$</p> <p>$-6 \quad -6$</p> <p>$1 = b$</p> <p>$y = 2x + 1$</p>
<p>E (-2, 4) F (8, -1) x_1, y_1, x_2, y_2</p> <p>$m = \frac{y_2 - y_1}{x_2 - x_1}$</p> <p>$m = \frac{-1 - 4}{8 - (-2)}$</p> <p>$m = \frac{-5}{10}$</p> <p>$m = -\frac{1}{2}$ (lowest terms)</p> <p>$y = mx + b$ use point ①</p> <p>$4 = (-\frac{1}{2})(-2) + b$</p> <p>$4 = 1 + b$</p> <p>$-1 \quad -1$</p> <p>$3 = b$</p> <p>$y = -\frac{1}{2}x + 3$</p>	<p>G (-5, -3) H (4, 6) x_1, y_1, x_2, y_2</p> <p>$m = \frac{y_2 - y_1}{x_2 - x_1}$</p> <p>$m = \frac{6 - (-3)}{4 - (-5)}$ ($6+3$) ($4+5$)</p> <p>$m = \frac{9}{9}$</p> <p>$m = 1$</p> <p>$y = mx + b$ use point ②</p> <p>$6 = (1)(4) + b$</p> <p>$6 = 4 + b$</p> <p>$-4 \quad -4$</p> <p>$2 = b$</p> <p>$y = x + 2$</p>

I (-3, 2) J (-1, -6)
x₁ y₁ x₂ y₂

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{-6 - 2}{-1 - (-3)} = \frac{-8}{-1 + 3}$$

$$m = \frac{-8}{2}$$

$$m = -4$$

y = mx + b
use point ①

$$2 = (-4)(-3) + b$$

$$2 = 12 + b$$

$$-12 \quad -12$$

$$-10 = b$$

$$y = -4x - 10$$

K (0, 2) L (6, -6)
x₁ y₁ x₂ y₂

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{-6 - 2}{6 - 0}$$

$$m = \frac{-8}{6}$$

$$m = -\frac{4}{3} \text{ (lowest terms)}$$

y = mx + b
use point ②

$$-6 = (-\frac{4}{3})(6) + b$$

$$-6 = \frac{-24}{3} + b$$

$$-6 = -8 + b$$

$$+8 \quad +8$$

$$2 = b$$

$$y = -\frac{4}{3}x + 2$$

M (8, -7) N (-4, -7)
x₁ y₁ x₂ y₂

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{-7 - (-7)}{-4 - 8} = \frac{-7 + 7}{-4 - 8}$$

$$m = \frac{0}{-12}$$

$$m = 0$$

y = mx + b
use point ①

$$-7 = (0)(8) + b$$

$$-7 = 0 + b$$

$$-7 = b$$

This is a horizontal line

$$y = 0x - 7$$

$$y = -7$$

O (-3, 4) P (-3, -5)
x₁ y₁ x₂ y₂

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

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

$$m = \frac{-9}{0}$$

$$m = \text{undefined}$$

This is a vertical line!

$$x = -3$$

not y!!

