MTH1W - Analytic Geometry

Name Solutions

HW 7.2 Writing y=mx+b

Due Date _____ 5T____

Create the slope intercept form (y=mx+b) based on the given information.

1) Slope = 1, b = –5

$y = 1x - 5$

2) Slope = $-\frac{1}{2}$, y-intercept = 3

$y = -\frac{1}{2}x + 3$

3) Slope = $\frac{1}{2}$, $(0, -4)$

$y = \frac{1}{2}x - 4$

4) Slope = $\frac{3}{5}$, $(0, 5)$

$y = \frac{3}{5}x + 5$

5) through: $(-3, -4)$, slope = $\frac{5}{3} = m$

$y = mx + b$

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

$-4 = -5 + b$

$+5 \quad +5$

$1 = b$

$\therefore y = \frac{5}{3}x + 1$

6) through: $(1, 1)$, slope = $-1 = m$

$y = mx + b$

$1 = -1(1) + b$

$1 = -1 + b$

$+1 \quad +1$

$2 = b$

$\therefore y = -1x + 2$

7) through: $(-2, 2)$, slope = $-\frac{6}{5} = m$

$y = mx + b$

$2 = \frac{-6}{5}(-2) + b$

$2 = \frac{12}{5} + b$

$2 = 2.4 + b$

$-2.4 \quad -2.4$

$-0.4 = b$

$\therefore y = \frac{-6}{5}x - 0.4$

8) through: $(-4, 5)$, slope = $-\frac{1}{2} = m$

$y = mx + b$

$5 = \frac{-1}{2}(-4) + b$

$5 = 2 + b$

$-2 \quad -2$

$3 = b$

$\therefore y = \frac{-1}{2}x + 3$

9) through: (3, 4) and (2, –1)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1-4}{2-3} = \frac{-5}{-1} = 5$

$y = mx + b$

$4 = 5(3) + b$

$4 = 15 + b$

$-15 \quad -15$

$-11 = b$

$\therefore y = 5x - 11$

10) through: (–3, –1) and (4, –3)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-3 - (-1)}{4 - (-3)} = \frac{-2}{7}$

$y = mx + b$

$-1 = \frac{-2}{7}(-3) + b$

$-1 = \frac{6}{7} + b$

$-1 = 0.9 + b \rightarrow -1.9 = b$

$-0.9 \quad -0.9$

$\therefore y = \frac{-2}{7}x - 1.9$

11) through: (–3, –2) and (–4, 5)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - (-2)}{-4 - (-3)} = \frac{7}{-1} = -7$

$y = mx + b$

$5 = -7(-4) + b$

$5 = 28 + b$

$-28 \quad -28$

$-23 = b$

$\therefore y = -7x - 23$

12) through: (–2, 4) and (0, –4) $= y\text{-int}, \ b = -4$

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4-4}{0-(-2)} = \frac{-8}{2} = -4$

$\therefore y = -4x - 4$

13) Create the equation of the line which has the same slope as ① $2x - 5y = 10$ and the same y-intercept as ② $4x + 7y - 21 = 0$.

① $2x - 5y = 10$

$2x - 10 = 5y$

$\frac{2}{5} \quad \frac{10}{5} \quad \frac{5y}{5}$

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

$m = \frac{2}{5}$

② $4x + 7y - 21 = 0$

$7y = -4x + 21$

$\frac{7y}{7} = \frac{-4x}{7} + \frac{21}{7}$

$y = \frac{-4}{7}x + 3$

$b = 3$

$\therefore y = \frac{2}{5}x + 3$