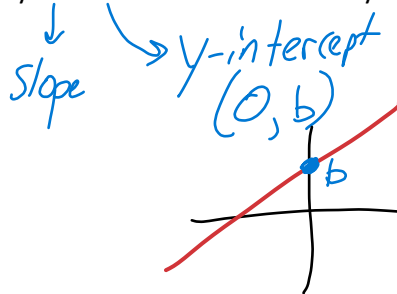Name: *Mr. Hagn.*

Review

Use your notes, homework, videos, each other, and me to help you review.

0. We learned about the Slope-Intercept Form, or y=mx+b. Write down all that you know about this equation.

Slope → *y-intercept* $(0,b)$

1. Calculate the slope. Reduce to lowest terms:

a) $(14,90),(24,-55)$

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

$m = \dfrac{-55 - 90}{24 - 14}$

$m = \dfrac{-145}{10} = \dfrac{-29}{2}$

b) $(-3,8),(-9,10)$

$m = \dfrac{10 - 8}{-9 - (-3)}$

$m = \dfrac{2}{-6}$

$m = -\dfrac{1}{3}$

2. Determine the slope and y-intercept of each line by rearranging each equation to y=mx+b.

a) $y = \dfrac{3}{5}x - 6$

$m = \dfrac{3}{5}$

$b = --6$

b) $\dfrac{3y}{3} = \dfrac{9}{3} + \dfrac{15x}{3}$

$y = 5x + 3$

$m = \dfrac{5}{1}$ $b = 3$

c) $3x + 6y - 1 = 0$

$\dfrac{6y}{6} = \dfrac{-3x}{6} + \dfrac{1}{6}$

$y = \dfrac{-1}{2}x + \dfrac{1}{6}$

$m = \dfrac{-1}{2}$ $b = \dfrac{1}{6}$

d) $\dfrac{1}{2}x + \dfrac{3}{4}y = \dfrac{5}{8}$ (hint: multiply by the common denominator)

$\dfrac{4}{8}x + \dfrac{6}{8}y = \dfrac{5}{8}$
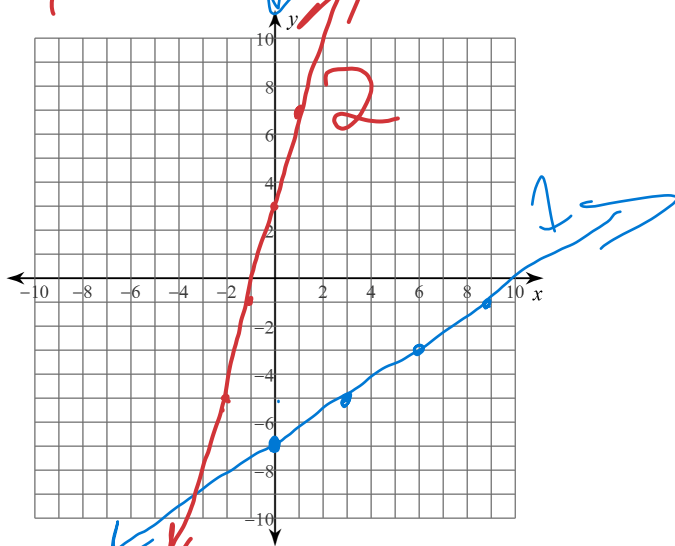
$4x + 6y = 5$

$\dfrac{6y}{6} = \dfrac{-4x}{6} + \dfrac{5}{6}$

$y = \dfrac{-2}{3}x + \dfrac{5}{6}$
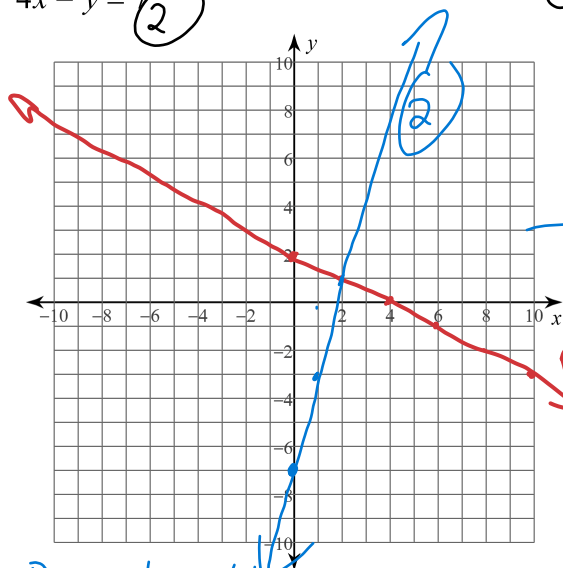
$m = \dfrac{-2}{3}$

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

3. Graph the lines on the grid provided. Label the lines 1 and 2.

a) $y = \dfrac{2}{3}x - 7$

$y = 4x + 3$ **b**
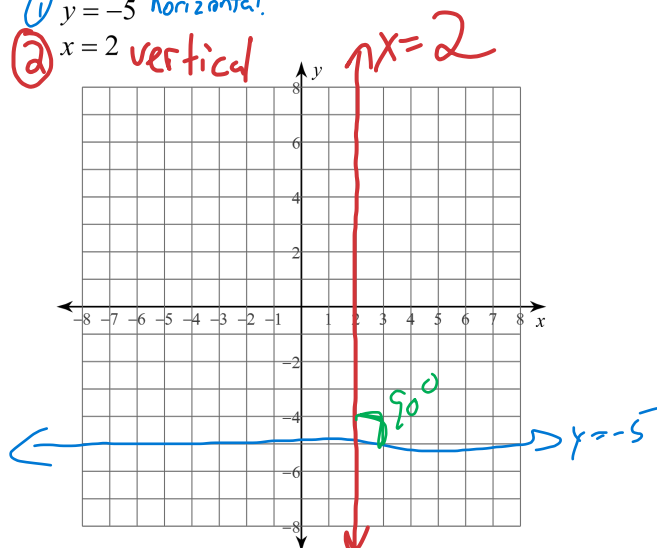

b) $x + 2y = 4$ (1)

$4x - y = 7$ (2)

(1) $x + 2y = 4$

$\dfrac{2y}{2} = \dfrac{-x}{2} + \dfrac{4}{2}$

$y = -\dfrac{1}{2}x + 2$

(2) $4x - y = 7$

$4x - 7 = y$

c) (1) $y = -5$ horizontal

(2) $x = 2$ vertical

$x = 2$

$90°$

$y = -5$

4. Determine the slope perpendicular to each of the following:

a) $m = \dfrac{-5}{7}$

$m_\perp = \dfrac{1}{5}$

b) $m = \dfrac{2}{7}$

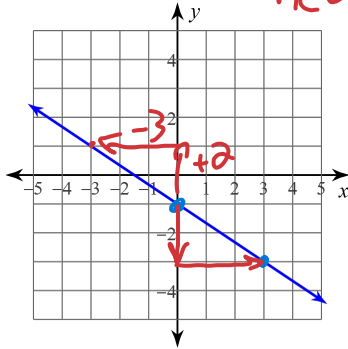$m_\perp = \dfrac{-7}{2}$

c) $m = undefined$

$m_\perp = 0$

d) $m = \dfrac{-9}{100}$

$m_\perp = \dfrac{100}{9}$

5. For each question, determine the equation of the line in Slope-Intercept Form (y=mx+b)
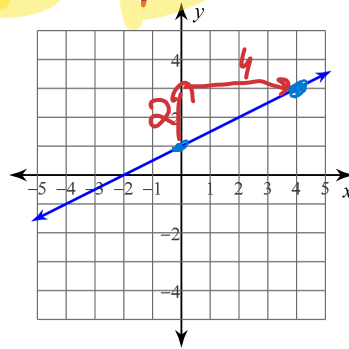
need m and b or point.

a)

$b = -1$

$m = \dfrac{-2}{3}$

$y = \dfrac{-2}{3}x - 1$

✓

b)

$b = 1$

$m = \dfrac{2}{4} = \dfrac{1}{2}$

$y = \dfrac{1}{2}x + 1$

✓

c) $m = 5$ and goes through the point $(0, -3)$

y-int, $b = -3$

$y = 5x - 3$

d) $m = \dfrac{-3}{4}$ and goes through the point $(-4, 7)$

$y = mx + b$

$7 = \dfrac{-3}{4}(-4) + b$

$7 = 3 + b$

$4 = b$

$\therefore y = \dfrac{-3}{4}x + 4$

e) Goes through the points $(1, -5)$ and $(-3, 2)$

x y

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

$m = \dfrac{7}{-4}$

$m = \dfrac{-7}{4}$

$y = mx + b$

$-5 = \dfrac{-7}{4}(1) + b$

$-5 = -1.75 + b$

$+1.75 \qquad +1.75$

$-3.25 = b$

$\therefore y = \dfrac{-7}{4}x - 3.25$

→ slopes are the same/equal.

f) Parallel to $3x - 4y + 8 = 0$ and goes through the point $(\overset{x}{8}, \overset{y}{2})$

① Slope

$3x \cdot 4y + 8 = 0$

$3x + 8 = 4y$

$\dfrac{3x}{4} + \dfrac{8}{4} = \dfrac{4y}{4}$

$\dfrac{3}{4}x + 2 = y$

$m = \dfrac{3}{4}$ ✓

$y = mx + b$

$2 = \dfrac{3}{4}(8) + b$

$2 \overset{-6}{=} 6 \overset{\cdot 6}{} + b$

$-4 = b$

$\therefore y = \dfrac{3}{4}x - 4$

g) Perpendicular to $y = \dfrac{-5}{4}x - 6$ and has the same y-intercept as $7x + 4y - 8 = 0$

① $m = \dfrac{-5}{4}$

$m_\perp = \dfrac{4}{5}$ ✓

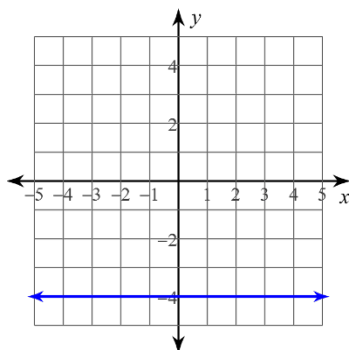② $\overset{b}{=}$ $7x + 4y - 8 = 0$

$\dfrac{4y}{4} = \dfrac{-7x}{4} + \dfrac{8}{4}$
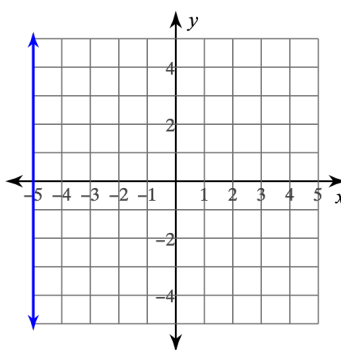
$y = \dfrac{-7}{4}x + 2$

$b = 2$

$\therefore y = \dfrac{4}{5}x + 2$

h)

$y = -4$

i)

$x = -5$