

Warm up:

$$\text{Given } 2x - 5y + 12 = 0$$

$$\frac{2x}{5} + \frac{12}{5} = \frac{5y}{5}$$

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

$$m_{||} = \frac{2}{5}$$

$$m_{\perp} = -\frac{5}{2}$$

$$y = \frac{2}{5}x + \frac{12}{5}$$

8.6) Parallel and Perpendicular Lines | May 30, 2016 ^{pg 438}

The following slopes are perpendicular. Find the missing value.

$$46. \frac{3}{1}, \frac{x}{6}$$

$$\text{Let } m = \frac{3}{1}$$

$$m_{\perp} = -\frac{1}{3}$$

$$\text{Now: } -\frac{1}{3} = \frac{x}{6}$$

$$-\frac{6}{3} = \frac{3x}{3}$$

$$-2 = x$$

$$49. \frac{2}{3}, \frac{x}{4}$$

$$\text{Let } m = \frac{2}{3}, m_{\perp} = -\frac{3}{2}$$

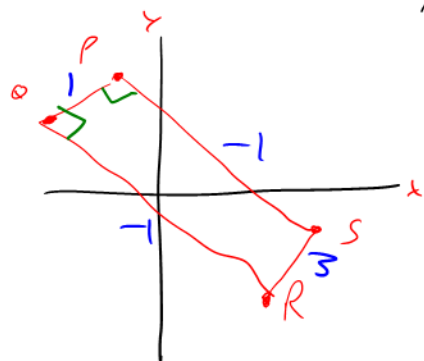
$$\text{Now: } -\frac{3}{2} = \frac{x}{4}$$

$$-\frac{12}{2} = \frac{2x}{2}$$

$$-6 = x$$

Plot and determine which figure it is:

$$53. P(-2, 5), Q(-4, 3), R(4, -5), S(5, -2)$$



$$m_{PQ} = \frac{3-5}{-4-(-2)} = \frac{-2}{-2} = 1$$

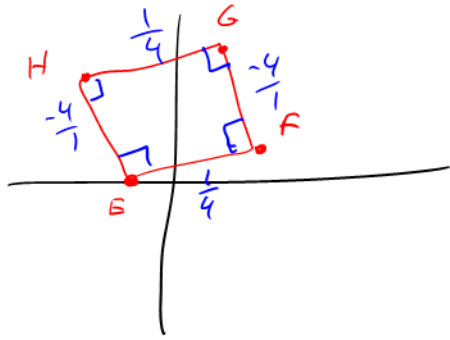
$$m_{SP} = \frac{-2-5}{5-(-2)} = \frac{-7}{7} = -1$$

$$m_{QR} = \frac{-5-3}{4-(-4)} = \frac{-8}{8} = -1$$

$\therefore$ trapezoid

$$m_{RS} = \frac{-2-(-5)}{5-4} = \frac{3}{1} = 3$$

54. $E(-1,0)$ $F(3,1)$ $G(2,5)$ $H(-2,4)$



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

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

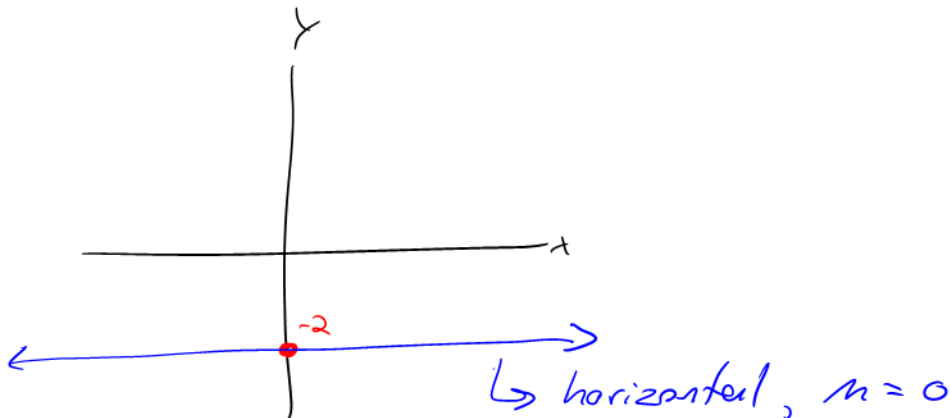
$$m_{GH} = \frac{4-5}{-2-2} = \frac{-1}{-4} = \frac{1}{4}$$

$$m_{HE} = \frac{4-0}{-2-1} = \frac{4}{-1} = -4$$

∴ because the slopes are $\perp$, this is a square or rectangle

All points were one full slope from each other, therefore all lines are equal and it is a square

58. Write an equation of the line that is perpendicular to the y -axis and has a y -intercept of -2 .



$$y = -2$$

through: $(2, -1)$, perp. to $y = -\frac{2}{3}x - 5$

Create the equation in Standard Form and $y = mx + b$ form.

2 Things needed: (1) Point $(2, -1)$
(2) slope

(1) Slope:

$$y = -\frac{2}{3}x - 5$$

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

$$m_{\perp} = \frac{3}{2}$$

(2) Create equation

$$y - y_1 = m(x - x_1)$$

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

$$2y + 2 = 3x - 6$$

$$0 = 3x - 2y - 8$$

Standard Form

$$\frac{2y}{2} = \frac{3x}{2} - \frac{8}{2}$$

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

$y = mx + b$
form

(slope intercept)

Homework: pg 438 + 48, 50, 52, 55, 56

Handout $\rightarrow$ 4 more graphing AND #21-26