M-G Geometry Week 14 1/8

Find the sum of the interior angles of a

a) dodecagon

n = # of side

$180(n-2)$

$n = 12$

$180(12-2)$

$180(10) = \boxed{1800°}$

b) hexacontagon (60-gon)

$180(60-2)$

$180(58) = \boxed{10{,}440°}$

Find the value of x

(not drawn to scale)

$n = 5$

$180(n-2)$

$180(5-2)$

$180(3) = 540$

$120 + 4x + 145 + 6x + 5x = 540$

$15x + 265 = 540$

$-265 \quad -265$

$\frac{15x}{15} = \frac{275}{15}$

$\boxed{x = 18.\overline{3}}$

Find the individual interior angle of a regular 18-gon

↳ all sides/angles are equal

$$\frac{\text{total interior sum}}{\text{\# of sides}} = \frac{180(n-2)}{n} = \frac{180(18-2)}{18} = \frac{\cancel{180}^{10}(16)}{\cancel{18}_{1}}$$

$\boxed{= 160}$

Find slope.

$(2,5) \quad (-1,-4)$

$$\text{slope} = m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4-5}{-1-2} = \frac{-9}{-3} = \boxed{3}$$

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

Write in linear equation

slope $= \frac{2}{3}$ (m) y-intercept $= -5$ (b)

slope-intercept form:

$y = mx + b$

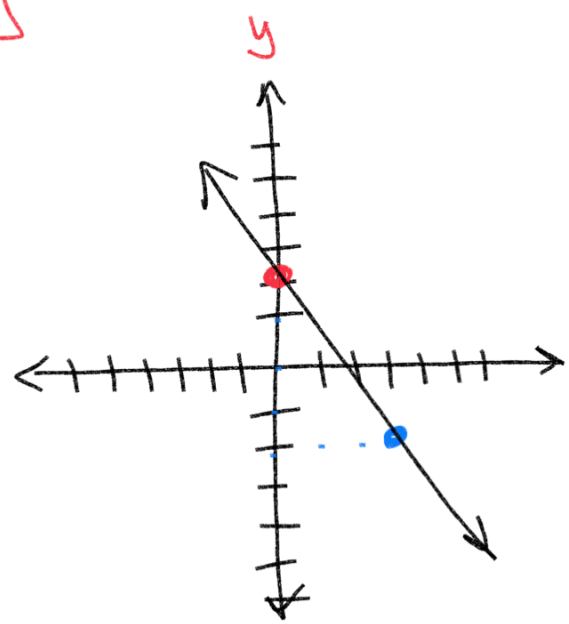
$$\boxed{y = \frac{2}{3}x - 5}$$

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

1.) Graph y-int (y-int)

2.) Use slope

$$\frac{-4}{3} = \frac{\text{down } 4}{3 \text{ right}}$$



Find the equation for a line:

$\boxed{\text{slope} = \frac{2}{3}}$ through $(-3, 9)$ (x, y)

m

$y = mx + b$

$9 = \left(\frac{2}{3}\right)(-3) + b$

$9 = -2 + b$

$+2 \quad +2$

$\boxed{11 = b}$

$y = mx + b$

$\boxed{y = \frac{2}{3}x + 11}$

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

$y - 9 = \frac{2}{3}(x - (-3))$

$y - 9 = \frac{2}{3}(x + 3$

$y - 9 = \frac{2}{3}x + 2$

$+9 \quad +9$

$\boxed{y = \frac{2}{3}x + 11}$

Find the equation for the line between $(5, -3)$ and $(0, -2)$

1.) Find slope

$m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 - (-3)}{0 - 5} = \frac{-2 + 3}{-5} = \frac{1}{-5} = -\frac{1}{5}$

2.) Plug into $y = mx + b$ $\boxed{m = -\frac{1}{5}}$ $(0, -2)$

$y = mx + b$

$-2 = -\frac{1}{5}(0) + b$

$\boxed{-2 = b}$

$y = mx + b$

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

Find linear equation with the points:

$(1,8)$ and $(3,-2)$

1.) Find slope

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{8-(-2)}{1-3} = \frac{8+2}{1-3} = \frac{10}{-2} = \boxed{-5 = m}$$

2.) Plug into $y = mx + b$

$$y = mx + b$$

$$\boxed{y = -5x + 13}$$

$$y = mx + b$$

$$-2 = (-5)(3) + b$$

$$-2 = -15 + b$$

$$+15 \quad +15$$

$$\boxed{13 = b}$$

Standard Form

$$Ax + By = C$$

$$5x + 4y = 20$$

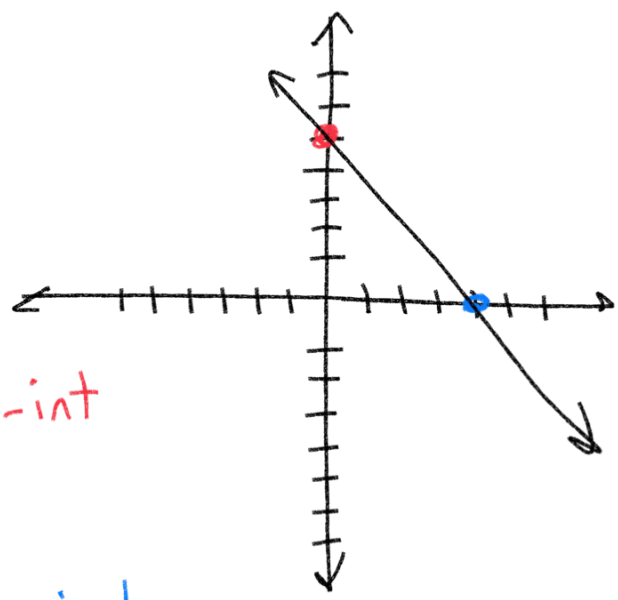
$$\frac{\cancel{5x}}{} + \frac{4y}{4} = \frac{20}{4}$$

$x = 0$ $\quad y = 5$ $\quad (0,5)$ y-int

$$\frac{5x}{5} + \frac{\cancel{4y}}{} = \frac{20}{5}$$

$y = 0$ $\quad x = 4$ $\quad (4,0)$ x-int

Graph using x & y intercepts

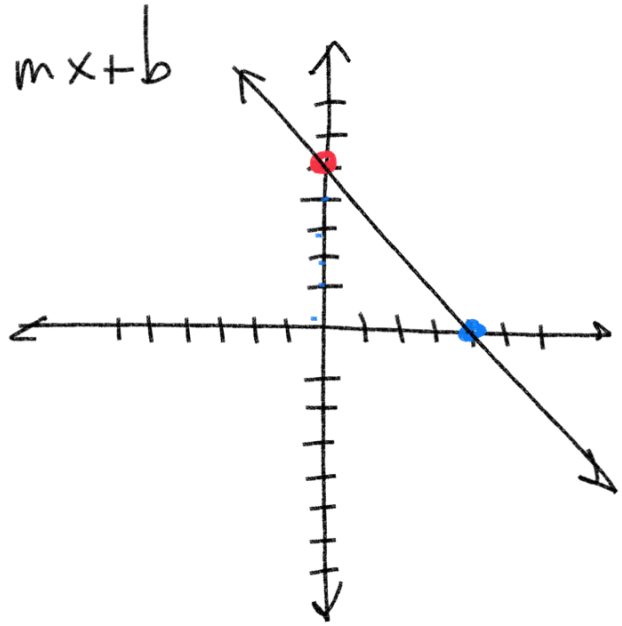


$$5x + 4y = 20$$
$$-5x \qquad\qquad -5x$$

$$\frac{4y}{4} = -\frac{5x}{4} + \frac{20}{4}$$

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

$y = mx + b$



1.) Graph y-int

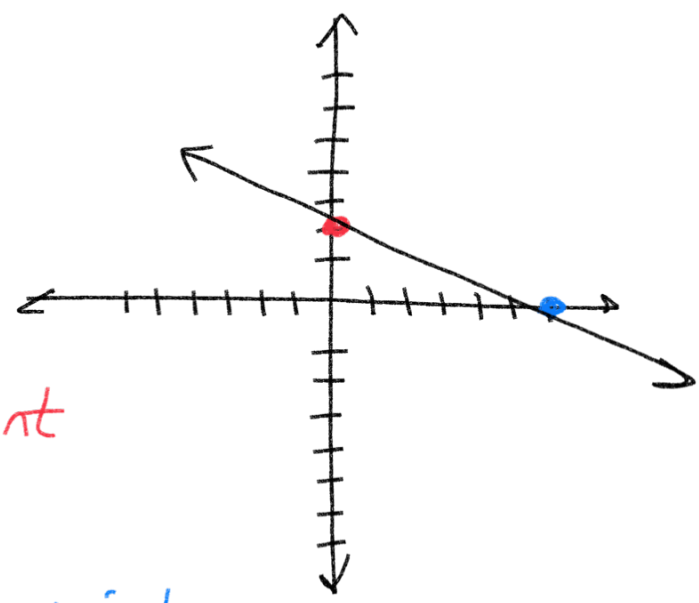
2.) Use slope $m = -\frac{5}{4} = \frac{\text{down } 5}{\text{right } 4}$

$$2x + 6y = 12$$

$$\frac{\cancel{2x}}{\cancel{2}} + \frac{6y}{6} = \frac{12}{6}$$

$x = 0$

$y = 2 \quad (0,2)$ y-int



$$\frac{2x}{2} + \frac{\cancel{6y}}{\cancel{6}} = \frac{12}{2}$$

$y = 0$

$x = 6$

$(6,0)$ x-int