T-G Geometry Week 14 12/13

Find the sum of the interior angles of a dodecagon. (12-gon)

$180(n-2)$ $n = \#$ of sides

$180(12-2)$

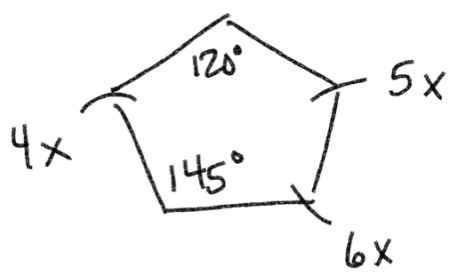
$180(10) = \boxed{1800°}$

Of a hexacontagon. (60-gon)

$180(60-2)$

$180(58) = \boxed{10{,}440°}$

Find the value of x



not drawn to scale

$n = 5$

$180(n-2)$

$180(5-2)$

$180(3) = 540°$

$\underbrace{5x+6x+4x}+145°+120° = 540$

$15x + 265 = 540$

$-265 \quad -265$

$\frac{15x}{15} = \frac{275}{15}$ $\boxed{x = 18.3}$

Find the individual (interior) angle of a regular 18-gon

$n = \#$ of sides

$\frac{180(n-2)}{n}$

$\frac{180(18-2)}{18} = \frac{180(16)}{18} = \boxed{160°}$

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \left[\frac{y_2 - y_1}{x_2 - x_1}\right]$$

$(3, -4)$ and $(-5, 8)$ Find the slope

$x_2 \quad y_2 \qquad x_1 \quad y_1$

$$\frac{-4-8}{3-(-5)} = \frac{-4-8}{3+5} = \frac{-12 \div 4}{8 \div 4} = \boxed{\frac{-3}{2}} \qquad \frac{\text{down } 3}{2 \text{ right}}$$

$$\frac{8-(-4)}{-5-3} = \frac{8+4}{-5-3} = \frac{12}{-8} = \boxed{\frac{-3}{2}}$$

Find the slope

$(6, 4)$ and $(8, -10)$

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-10-4}{8-6} = \frac{-14}{2} = \boxed{-7} \qquad \frac{7 \text{ down}}{1 \text{ right}}$$

Slope - Intercept Form

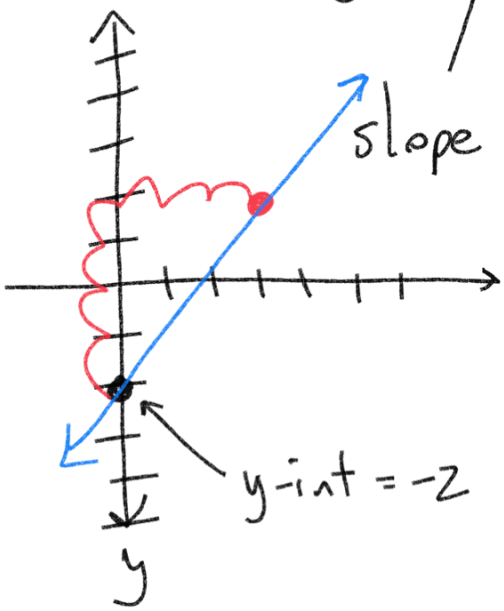
$$y = mx + b$$

slope

y-intercept

slope $= \frac{4}{3}$

y-int $= -2$



$m = \frac{4}{3}$ $\frac{\text{up } 4}{3 \text{ right}}$

$y = mx + b$

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

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

Find equation and graph

→ slope $= -\frac{7}{2}$

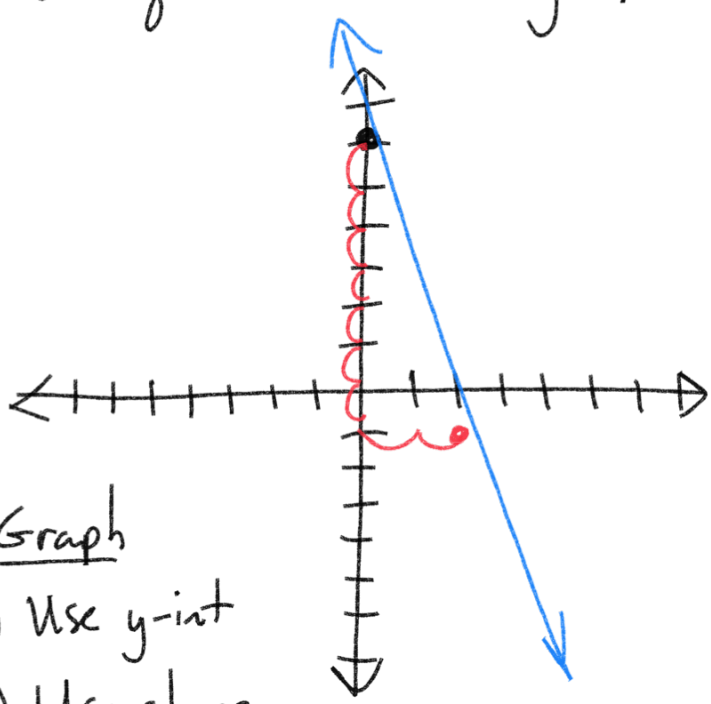
→ y-int $= 6$

slope-intercept form

$y = mx + b$

$$\boxed{y = -\frac{7}{2}x + 6}$$

$m = \frac{-7}{2}$ $\frac{\text{down } 7}{2 \text{ right}}$



Graph

1.) Use y-int

2.) Use slope

$\frac{7}{2}$ $\frac{-7}{2}$ down/up right

$-\frac{7}{2} = \frac{-7}{2} = \frac{7}{-2} \neq \frac{-7}{-2}$

Find equation of line with a slope of 2 that goes through the point $(3,-4)$

$x \quad y$

Slope-intercept form

$y = mx + b$

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

$-4 = 6 + b$

$-6 \quad -6$

$\boxed{-10 = b}$

$\boxed{m = 2}$

$x = 3$

$y = -4$

$y = mx + b$

$\boxed{y = 2x - 10}$

$m = 2$

$(3,-4)$

$x_1 \quad y_1$

Point-Slope form

$$(x_2 - x_1)m = \left(\frac{y_2 - y_1}{x_2 - x_1}\right)(x_2 - x_1)$$

$$\boxed{y - y_1 = m(x - x_1)}$$

$$y - (-4) = 2(x - 3)$$

$$\boxed{y + 4 = 2(x - 3)}$$

$$y + 4 = 2x - 6$$

$$-4 \qquad -4$$

$$\boxed{y = 2x - 10}$$

Find the equation for the line with a slope $= -\frac{1}{4}$ through the point $(4, 8)$

slope-intercept form

$y = mx + b$

$y = mx + b$

$8 = \left(\frac{-1}{4}\right)(4) + b$

$8 = -1 + b$

$+1 \quad +1$

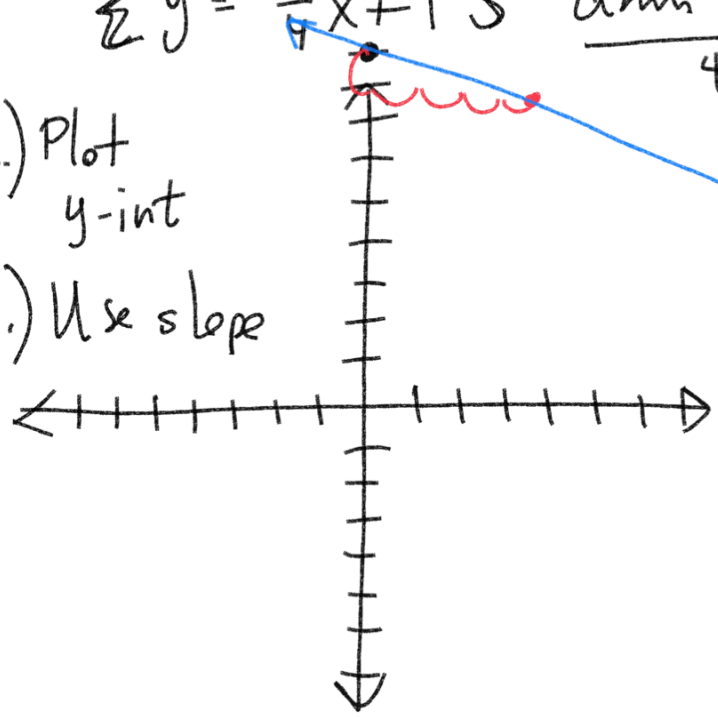
$9 = b$

$y = mx + b$

$\left\{ y = -\frac{1}{4}x + 9 \right\}$

1.) Plot y-int

2.) Use slope $\frac{\text{down } 1}{4 \text{ right}}$



Find the equation for the line between $(5, -3)$ ① and $(0, -2)$ ②

1.) Find the slope

2.) Plug into $y = mx + b$ to solve for b

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

$m = \frac{-1}{5}$

$y = mx + b$

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

$-2 = b$

$y = mx + b$

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