

S-G Geometry Session 10 7/11

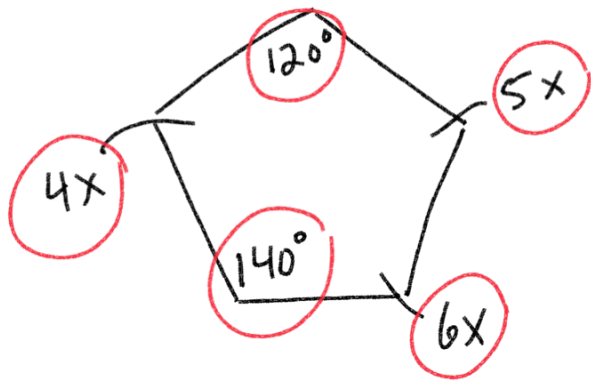
Find the sum of the interior angles of a dodecagon (12-sided)

$$180(n-2) = 180(10) = \boxed{1800^\circ}$$
$$180(12-2)$$

Find the sum of the interior angles of a hexacontagon (60-sided)

$$180(n-2) = 180(58) = \boxed{10,440^\circ}$$

Find the value of x



$$180(n-2) \quad n=5$$

$$180(5-2) = 180(3) = 540^\circ$$

$$120 + 5x + 6x + 140 + 4x = 540$$

$$15x + 260 = 540$$
$$-260 \quad -260$$

$$\frac{15x}{15} = \frac{280}{15}$$

$$\boxed{x = 18.\bar{6}}$$

Find the individual interior angle of a

regular 18-gon. $n = 18$

equal \nearrow

$$\frac{180(n-2)}{n}$$
$$\frac{180(18-2)}{18} = \frac{180(16)}{18} = \frac{2880}{18} = \boxed{160^\circ}$$

$$\text{Slope} = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$

(x_1, y_1) and (x_2, y_2) Find the slope.

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

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

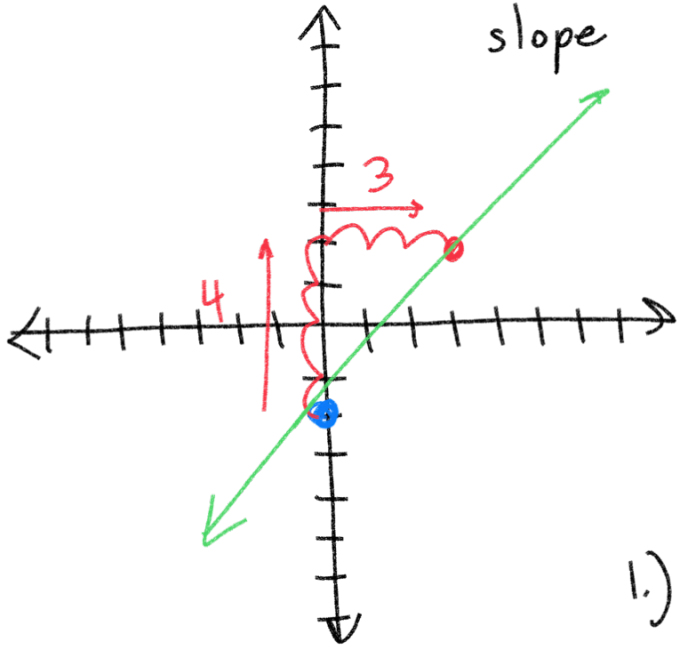
Find the slope. (x_2, y_2) and (x_1, y_1)

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - (-10)}{6 - 8} = \frac{4 + 10}{-2} = \frac{14}{-2} = \boxed{-7}$$

Slope-Intercept form

$$y = mx + b$$

↑
↑
 slope y-intercept



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

$$\text{y-int: } -2 = b$$

$$y = mx + b$$

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

1.) Plot y-int

2.) Use slope for 2nd point

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

Find the equation
and graph

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

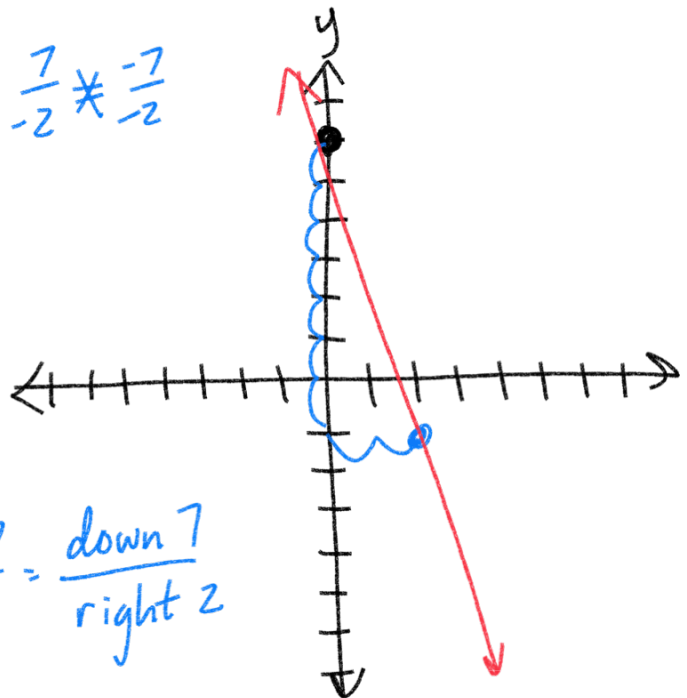
$$\text{slope} = -\frac{7}{2} = m$$

$$\text{y-int} = 6$$

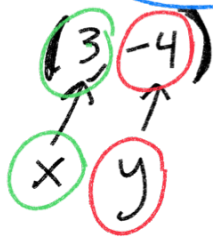
$$y = mx + b$$

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

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



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



Slope-Intercept Form

$$y = mx + b$$

↑
slope

$$m = 2$$

$$x = 3$$

$$y = -4$$

$$y = mx + b$$

$$y = 2x - 10$$

$$y = mx + b$$

↓ ↓ ↓

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

$$-4 = 6 + b$$

-6 -6

$$-10 = b$$

Point-Slope Form

Derives from slope

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

$$y_2 - y_1 = m(x_2 - x_1)$$

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

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

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

-4 -4

$$m = 2$$

$$(3, -4)$$

$$x = 3$$

$$y = -4$$

$$y = 2x - 10$$

Find the equation for the line with slope = $-\frac{1}{4}$

through the point (4, 8)

$$\left\{ \begin{array}{l} m = -\frac{1}{4} \\ x = 4 \\ y = 8 \end{array} \right.$$

$$y = mx + b$$

$$\downarrow \quad \downarrow \quad \downarrow$$

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

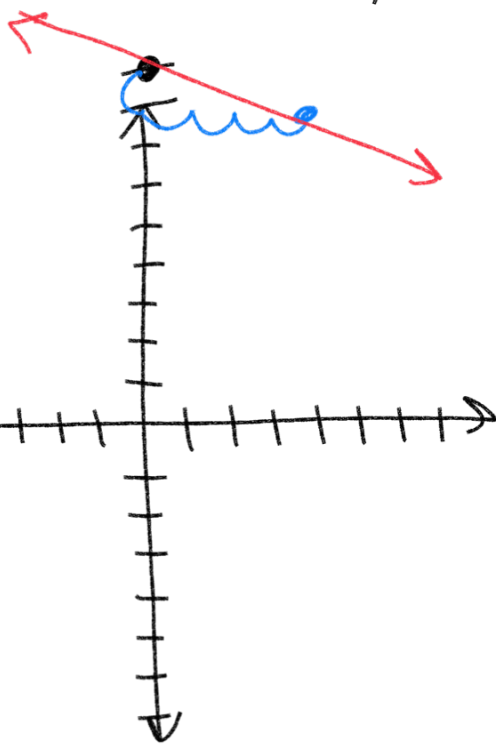
$$8 = -1 + b$$

$$+1 \quad +1$$

$$\left\{ \begin{array}{l} 9 = b \end{array} \right.$$

$$-\frac{1}{4} = \frac{\text{down } 1}{\text{right } 4}$$

$$y = mx + b$$
$$\downarrow \quad \downarrow$$
$$y = -\frac{1}{4}x + 9$$



Find the equation of the line between

$$\left\{ \begin{array}{l} (5, -3) \text{ and } (0, -2) \\ x_2, y_2 \quad \quad x_1, y_1 \end{array} \right.$$

1.) Find the slope

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

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

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

$$\left\{ \begin{array}{l} (0, -2) \end{array} \right.$$

$$\boxed{m = -\frac{1}{5}} \quad x = 0 \quad y = -2$$

$$y = mx + b$$
$$\downarrow \quad \downarrow \quad \downarrow$$
$$-2 = \left(-\frac{1}{5}\right)(0) + b$$
$$\boxed{-2 = b}$$
$$y = mx + b$$
$$\boxed{y = -\frac{1}{5}x - 2}$$

