M-G Geometry Week 14 1/9

Find the sum of the interior angles of:

a) dodecagon (12-gon)

$180(n-2)$ $n=12$

$180(12-2)$

$180(10) = \boxed{1800^\circ}$

b) hexacontagon (60-gon)

$180(n-2)$

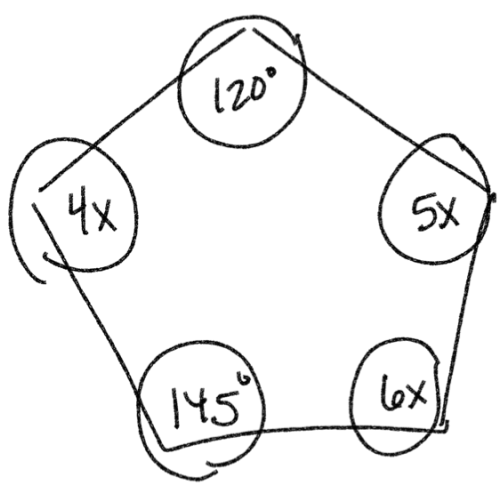
$180(60-2)$

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

△ $3 \rightarrow 180^\circ$

▭ $4 \rightarrow 360$

Find the value of x



not drawn to scale

$n=5$

$180(n-2)$

$180(5-2)$

$180(3) = 540$

$120^\circ + 5x + 6x + 145^\circ + 4x = 540$

$15x + 265 = 540$

$-265 \quad -265$

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

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

Find the individual interior angle measure of a <u>regular</u> 18-gon.

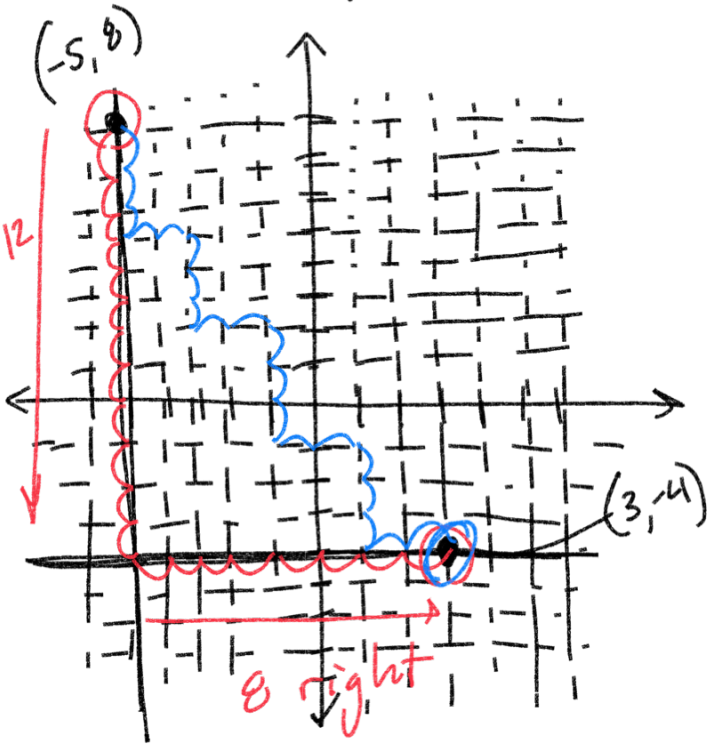
all sides/angles are equal

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

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

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

Find the slope between $\overset{x_2\ y_2}{(3,-4)}$ and $\overset{x_1\ y_1}{(-5,8)}$



$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4-8}{3-(-5)} = \frac{-4-8}{3+5} = \frac{\frac{-12 \div 4}{8 \div 4}}{} = \boxed{\frac{-3}{2}}$$

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

$$\frac{-3}{2} \rightarrow \frac{\text{12 down}}{\text{8 right}} \quad \frac{\text{3 down}}{\text{2 right}}$$

Find the slope.

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

$$\text{slope} = \frac{y_2-y_1}{x_2-x_1} = \frac{4-(-10)}{6-8} = \frac{4+10}{6-8} = \frac{14}{-2} = \frac{-7}{1} = \boxed{-7}$$

$\frac{7 \text{ down}}{1 \text{ right}}$

Slope-Intercept form

(x,y)

$y = mx + b$

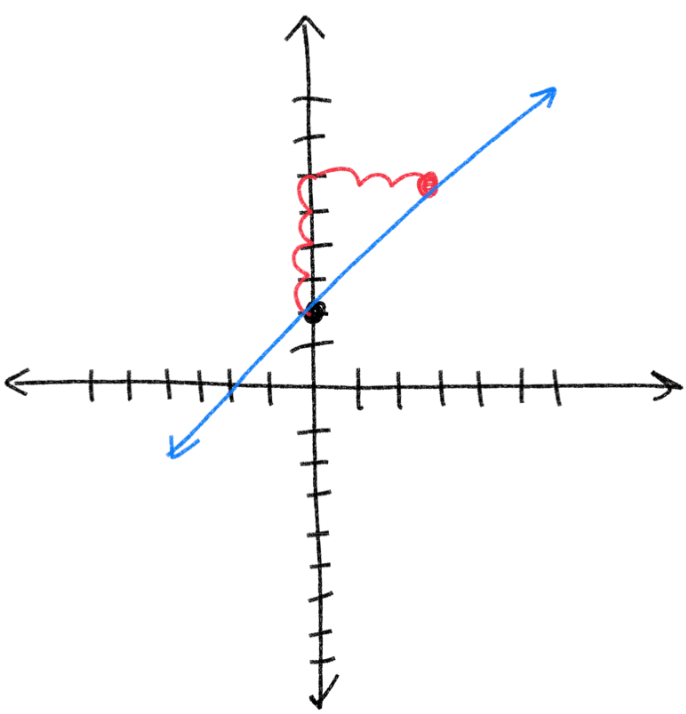
slope y-intercept

slope $= 4/3$ $m = 4/3$

y-int: 2 $b = 2$

$y = mx + b$

$$\boxed{y = \tfrac{4}{3}x + 2}$$



Graph

1) Plot y-int
2.) Use slope

$4/3 \rightarrow \frac{\text{up } 4}{3 \text{ right}}$

Find the linear equation for a line with

slope $= \frac{-7}{2}$ and $\boxed{\text{y-int: } 6}$ Then graph.

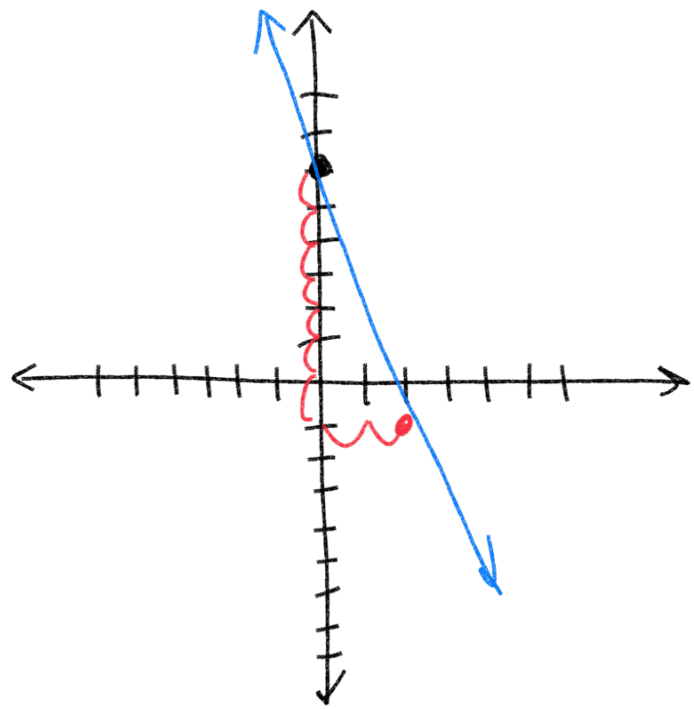
slope-intercept

$y = mx + b$

y-int

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

slope $\frac{7 \text{ down}}{2 \text{ right}}$



Find the equation of a line with

slope $= 2$ that goes through the point $(3, -4)$

$x \quad y$

$m = 2$

slope-intercept form

$y = mx + b$

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

$-4 = 6 + b$

$-6 \quad -6$

$-10 = b$

$y = mx + b$

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

Point-Slope form

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

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

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

$y + 4 = 2x - 6$

$-4 \qquad -4$

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

Find equation for a line with:

$\boxed{\text{slope} = -\frac{1}{4}}$ that goes through the point $(4, 8)$

$y = mx + b$

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

$8 = -1 + b$

$+1 \quad +1$

$\boxed{9 = b}$

$y = mx + b$

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

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

$y - 8 = -\frac{1}{4}(x - 4)$

$y - 8 = -\frac{1}{4}x + 1$

$+8 \qquad +8$

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

Find the equation for the line between

$(5, -3)$ and $(0, -2)$ use the $\emptyset$ one!

$x \quad y$

1st find slope

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

$y = mx + b$

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

$-2 = b$

$y = mx + b$

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