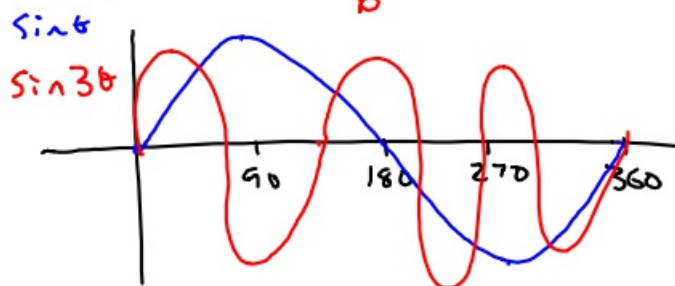


3-27-18 1<sup>st</sup> Trig

$$y = \sin(\underbrace{3\theta}_b)$$



$$\text{period} = \frac{360}{3} = 120^\circ$$
$$\frac{360}{b}$$

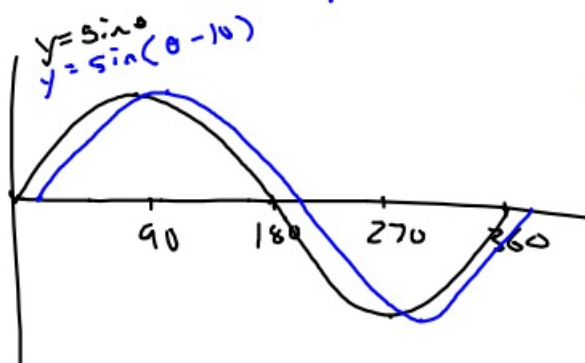
$$y = \frac{a}{\uparrow} \sin\left(\frac{b\theta}{\uparrow} + \frac{c}{\uparrow}\right)$$

amplitude

$$\text{period} = \frac{360}{b}$$

phase shift

$$-\frac{c}{b}$$



①  $y = 8 \sin(4\theta + 12)$

amplitude = 8

$$\text{period} = \frac{360}{b} = \frac{360}{4} = 90^\circ$$

$$\text{phase shift} = -\frac{c}{b} = -\frac{12}{4} = -3$$

$$\textcircled{2} \quad y = 4 \sin(2\theta - 10)$$

$$A = 4$$

$$P = \frac{360}{b} = \frac{360}{2} = 180$$

$$P.S. = \frac{-c}{b} = \frac{-(-10)}{2} = 5^\circ$$

$$\textcircled{3} \quad y = 5 \sin\left(\frac{1}{2}\theta + 8\right)$$

$$A = 5$$

$$P = \frac{360}{b} = \frac{360}{\frac{1}{2}} = 720$$

$$P.S. = \frac{-c}{b} = \frac{-8}{\frac{1}{2}} = -16$$

$\textcircled{4}$  Give sin equation with amplitude = 4, period = 120°, and phase shift = 12°.

$$y = 4 \sin(\underline{3}\theta - 36)$$

$$\text{period} = \frac{360}{b}$$

↓

$$\frac{120}{1} = \frac{360}{b}$$

$$\frac{120b}{120} = \frac{360}{120}$$

$$b = 3$$

$$\text{phase shift} = \frac{-c}{b}$$

$$\frac{12^\circ}{1} = \frac{-c}{3}$$

$$-c = 36$$

$$c = -36$$

$$\textcircled{5} \quad A = 8 \quad P = 45^\circ \quad P.S. = -16$$

$$y = 8 \sin \left( \underline{8} \ominus + 128 \right)$$

$$\text{period} = \frac{360}{b}$$

$$\frac{45}{1} = \frac{360}{b}$$

$$\frac{45b}{45} = \frac{360}{45}$$

$$\underline{b = 8}$$

$$P.S. = \frac{-c}{b}$$

$$\frac{-16}{1} = \frac{-c}{8}$$

$$-c = -128$$

$$\underline{c = 128}$$

$$\textcircled{6} \quad A = 2 \quad P = 720^\circ \quad P.S. = 4$$

$$y = 2 \sin \left( \underline{\frac{1}{2}} \ominus - 2 \right)$$

$$P = \frac{360}{b}$$

$$\frac{720}{1} = \frac{360}{b}$$

$$720b = 360$$

$$\underline{b = \frac{1}{2}}$$

$$P.S. = \frac{-c}{b}$$

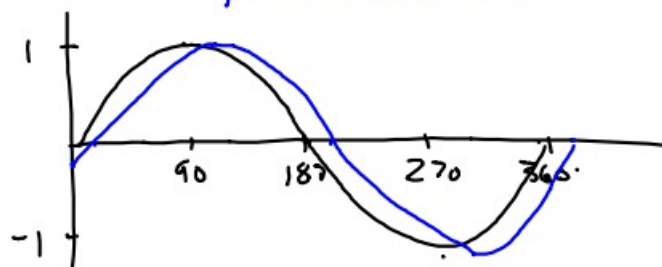
$$\frac{4}{1} = \frac{-c}{\frac{1}{2}}$$

$$-c = 2$$

$$\underline{c = -2}$$

3-27-18 3'' Trig

$$y = \sin \Theta$$
$$y = \sin(\Theta - 10)$$



$$y = a \sin(b\theta + c)$$

↑ amplitude      ↑ determines period      ↑ phase shift

$$\text{period} = \frac{360}{b} \qquad = \frac{-c}{b}$$

①  $y = 8 \sin\left(\frac{3}{b}\theta + 12^\circ\right)$

Amplitude = 8

Period =  $\frac{360}{b} = \frac{360}{3} = 120$

Phase shift =  $\frac{-c}{b} = \frac{-12}{3} = -4$

②  $y = 7 \cos(8\theta - 8)$

A = 7

P =  $\frac{360}{8} = 45$

P.S. =  $\frac{-c}{b} = \frac{-(-8)}{8} = 1^\circ$

$$\textcircled{3} \quad y = \sin(2\theta - 20)$$

$$A = 1$$

$$P = \frac{360}{2} = 180$$

$$P.S. = -\frac{c}{b} = \frac{-20}{2} = 10$$

$\textcircled{4}$  Give sin equation that has amplitude of 5, period of 120, and phase shift of 6.

$$y = 5 \sin(\underline{3}\theta - \underline{18})$$

$$\text{period} = \frac{360}{b}$$

↓

$$\frac{120}{1} = \frac{360}{b}$$

$$\frac{120b}{120} = \frac{360}{120}$$

$$b = 3$$

$$P.S. = -\frac{c}{b}$$

↓

$$\frac{6}{1} = -\frac{c}{3}$$

$$-c = 18$$

$$c = -18$$

$\textcircled{5}$  sin eq. w/  $A=4$   $P=90$   $P.S.=12$

$$y = 4 \sin(\underline{4}\theta - \underline{48})$$

$$\text{Period} = \frac{360}{b}$$

$$\frac{90}{1} = \frac{360}{b}$$

$$90b = 360$$

$$b = 4$$

$$P.S. = -\frac{c}{b}$$

$$\frac{12}{1} = -\frac{c}{4}$$

$$-c = 48$$

$$c = -48$$

⑥ sin eq. w/ period = 720° p.s. = 4°

$$y = \sin\left(\frac{1}{2}\theta - 2\right)$$

$$\text{period} = \frac{360}{b}$$

$$\text{p.s.} = \frac{-c}{b}$$

$$\frac{720}{1} = \frac{360}{b}$$

$$\frac{4}{1} = \frac{-c}{1}$$

$$\frac{720b}{720} = \frac{360}{720}$$

$$-c = 2$$

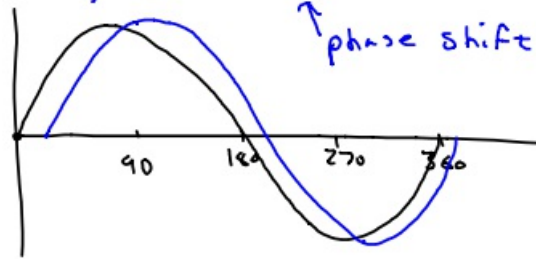
$$b = \frac{1}{2}$$

$$c = -2$$

3-27-18 4<sup>th</sup> Tr. 3

$$y = \sin \theta$$

$$y = \sin(\theta - 10)$$



$$y = a \sin(b\theta + c)$$

↑ amplitude      ↑ determines period      ↑ phase shift

①  $y = 10 \sin\left(\frac{2}{b}\theta - 8\right)$

amplitude = 10

period =  $\frac{360}{b} = \frac{360}{2} = 180$

phase shift =  $\frac{-c}{b} = \frac{-(-8)}{2} = 4$

②  $y = 5 \cos\left(\frac{4}{b}\theta + 12\right)$

A = 5

P =  $\frac{360}{b} = \frac{360}{4} = 90$

P.S. =  $\frac{-c}{b} = \frac{-12}{4} = -3$

③  $y = 100 \cos(10\theta - 20)$

A = 100

P =  $\frac{360}{10} = 36$

P.S. =  $\frac{-c}{b} = \frac{-(-20)}{10} = 2$

- ④ Give the sin equation with amplitude of 4, period of 120, and a phase shift of 15°.

$$y = 4 \sin(\underline{3}\theta - \underline{45})$$

$$\text{period} = \frac{360}{b}$$

$$\downarrow$$

$$\frac{120}{1} = \frac{360}{b}$$

$$120b = 360$$

$$b = 3$$

$$\text{p.s.} = \frac{-c}{b}$$

$$\downarrow$$

$$\frac{15}{1} = \frac{-c}{3}$$

$$-c = 45$$

$$c = -45$$

- ⑤ Sin eq. w

$$A = 8 \quad \text{period} = 45 \quad \text{p.s.} = 8$$

$$y = 8 \sin(\underline{8}\theta - \underline{64})$$

$$p = \frac{360}{b}$$

$$\frac{45}{1} = \frac{360}{b}$$

$$45b = 360$$

$$b = 8$$

$$\text{p.s.} = \frac{-c}{b}$$

$$\frac{8}{1} = \frac{-c}{8}$$

$$-c = 64$$

$$c = -64$$

- ⑥ sin eq. w/

$$\text{period} = 720 \quad \text{p.s.} = 6$$

$$y = \sin(\underline{\frac{1}{2}}\theta - \underline{3})$$

$$\text{period} = \frac{360}{b}$$

$$\frac{720}{1} = \frac{360}{b}$$

$$720b = 360$$

$$b = \frac{1}{2}$$

$$\text{p.s.} = \frac{-c}{b}$$

$$\frac{6}{1} = \frac{-c}{\frac{1}{2}}$$

$$-c = 3$$

$$c = -3$$