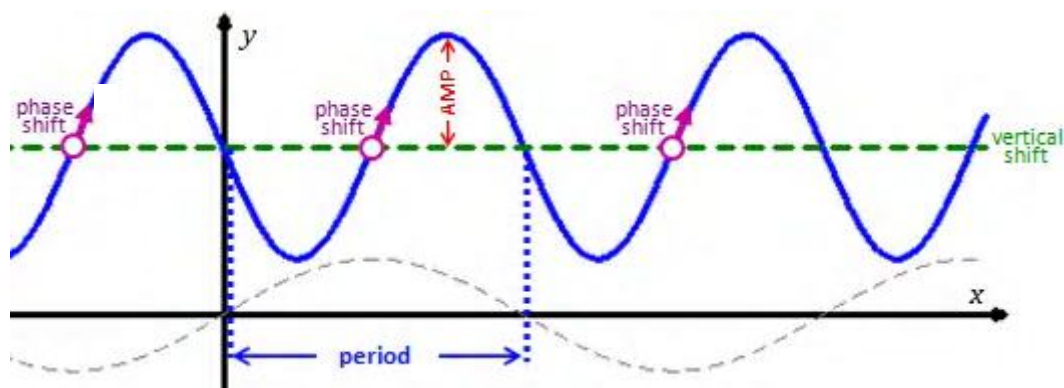




$$y = a \cdot \sin(b(x - c)) + d$$

a = Amplitude

c = Phase Shift

$$\frac{2\pi}{b} = \text{Period}$$

d = Vertical Shift

1. Determine the following parts of the graph described by following equation.

$$y = 4\sin(\pi(x - 3)) + 5$$

AMP
4

RIGHT
3

UP
5

$$\text{PERIOD} = \frac{2\pi}{\pi} = 2$$

Amplitude = **4**

Period = **2**

Phase Shift = **3**

Vertical Shift = **5**

2. Determine the following parts of the graph described by following equation.

$$y = 3\sin\left(\frac{1}{2}\left(x - \frac{3\pi}{2}\right)\right) + 4$$

AMP
3

RIGHT
 $3\pi/2$

UP
4

$$\text{PERIOD} = \frac{2\pi}{1/2} = 2\pi \div \frac{1}{2} = 2\pi \cdot 2 = 4\pi$$

Amplitude = **3**

Period = **4π**

Phase Shift = **$3\pi/2$**

Vertical Shift = **4**

$$y = a \sin(b(x-c)) + d$$

3. Determine the following parts of the graph described by following equation.

$$y = -5 \sin(2x + 6) - 1$$

$$y = -5 \sin(2(x+3)) - 1$$

AMP 5
 LEFT 3
 DOWN 1
 PERIOD = $\frac{2\pi}{2} = \pi$

Amplitude = 5

Period = π

Phase Shift = -3

Vertical Shift = -1

4. Determine the following parts of the graph described by following equation.

$$y = 4 \sin(\pi x - 2) + 6$$

$$y = 4 \sin\left(\pi\left(x - \frac{2}{\pi}\right)\right) + 6$$

AMP 4
 RIGHT $\frac{2}{\pi}$
 UP 6
 PERIOD = $\frac{2\pi}{\pi} = 2$

Amplitude = 4

Period = 2

Phase Shift = $\frac{2}{\pi}$

Vertical Shift = 6