

(11)  $3\sin(8(x+4))+5$

amp = 3

period =  $\frac{2\pi}{8} \rightarrow \left(\frac{\pi}{4}\right)$

horizontal shift Left 4  
midline  $y=5$

(12)

Amp  
4

Period  
 $2\pi \times \frac{2}{\pi} = 4$

HShift  
RT 3

midline  
 $y=7$

(13)

2

$\frac{2\pi}{3}$

RT 7

$y=4$

(14)

5

$\frac{2\pi}{5}$

Left 4

$y=-2$

(15)

1

$\frac{2\pi \cdot 6}{\pi} = 12$

Left 6

$y=-3$

(16)

8

$\frac{\pi}{4}$

Left 3

$y=6$

# Graphing

(6) mid -  $y = -3$

Sine graph

per = 4  $b = \frac{2\pi}{4} \rightarrow \frac{\pi}{2}$

amp = 2

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

(8) mid line  $y = -1$

Cosine

amp = 3

per =  $\pi$   $\frac{2\pi}{\pi} \rightarrow b = 2$

$$y = 3\cos(2x) - 1$$

(10) mid line  $y = -1$  sine graph

reflected around x-axis

amp = 1

per = 3

$\frac{2\pi}{3} = b$

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

10b?

Cosine graph

$$\text{per} = 10$$

$$"b" = \frac{\pi}{5} \Leftrightarrow \frac{2\pi}{10}$$

amp = 1

shifted left 2

midline  $y=0$

$$y = \cos\left(\frac{\pi}{5}(x-2)\right)$$

10c

Cosine shifted left 2

$$\text{Amp} = 2$$

midline  $y=0$

$$\text{per} = 6$$

$$"b" = \frac{2\pi}{6} = \frac{\pi}{3}$$

$$2\cos\left(\frac{\pi}{3}(x-2)\right)$$