

a.)  $\frac{360}{b} = \frac{360}{3} = 120'$

b.)  $3\theta = 0$   
 $\theta = 0$   
 $3\theta = 360$   
 $\theta = 120'$

Provide the requested information for each of the following.

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

2.  $y = -2 \cos(-3\theta) - 1$

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

a.)  $\frac{2\pi}{b} = \frac{2\pi}{\pi/4}$   
 $2\pi \cdot \frac{4}{\pi} = 8$   
 a. Period: 8

a. Period: 120°

b. Domain: [-2, 6]

b. Domain: [0°, 120°]

c. Phase Shift: -2

c. Phase Shift: None

d. Range: [-1, 5]

d. Range: [-3, 1]

e. Reflect across x-axis? yes

e. Reflect across x-axis? yes

f. Vertical Shift: 2

f. Vertical Shift: -1

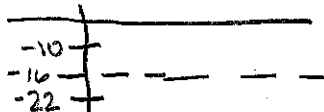
g. Amplitude: 3

g. Amplitude: 2

$x = -2$

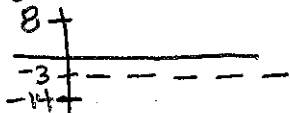
Provide the requested information for each of the following.

3. If the range of a sine function is [-22, -10], what is the vertical shift?



$\frac{-22 + -10}{2} = \boxed{-16}$

4. If the range of a cosine function is [-14, 8], what is the vertical shift?



$\frac{-14 + 8}{2} = \boxed{-3}$

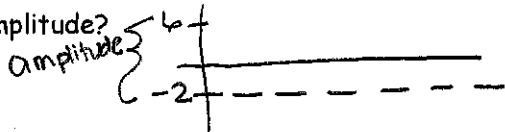
5. If the domain of a cosine function is  $\left[\frac{\pi}{4}, \frac{9\pi}{2}\right]$ , what is the period?

$\frac{9\pi}{2} - \frac{\pi}{4} = \boxed{\frac{17\pi}{4}}$

6. If the domain of a sine function is  $[-\pi, 5\pi]$ , what is the period?

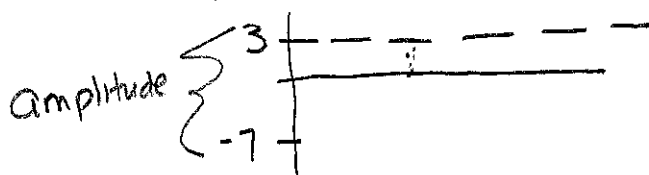
$5\pi - -\pi = 5\pi + \pi = \boxed{6\pi}$

7. If the horizontal axis of a cosine function is at  $y = -2$  and the maximum value is at 6, then what is the amplitude?



$6 - -2 = 6 + 2 = \boxed{8}$

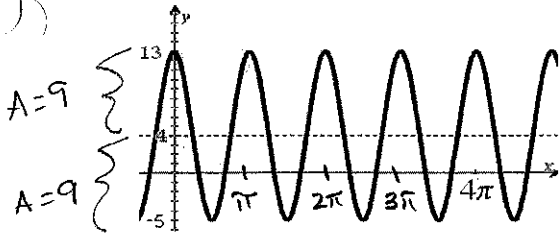
8. If the horizontal axis of a sine function is at  $y = 3$  and the minimum value of the function is at -7, then what is the amplitude?



$3 - -7 = 3 + 7 = \boxed{10}$

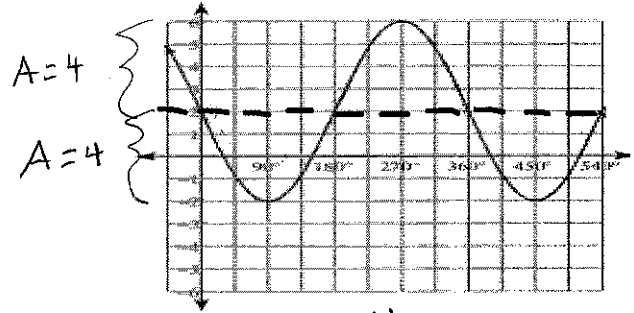
Provide the requested information for each of the following.

9. Cosine Graph -



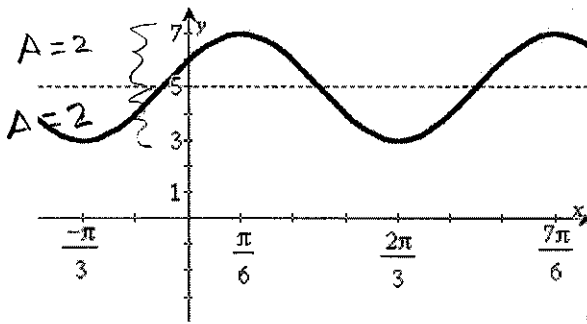
- a. Amplitude: 9
- b. Reflect across x-axis? NO
- c. Phase Shift: None
- d. Domain:  $[0, \pi]$
- e. Period:  $\pi$
- f. Vertical Shift: 4
- g. Range:  $[-5, 13]$

10. Sine Graph -



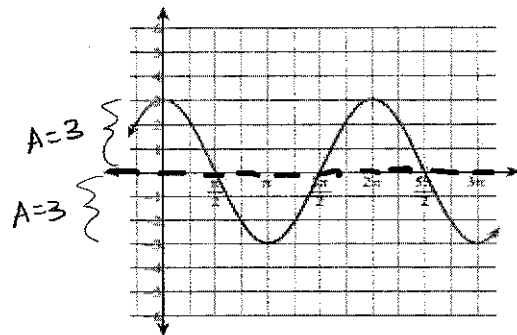
- a. Amplitude: 4
- b. Reflect across x-axis? Yes
- c. Phase Shift: None
- d. Domain:  $[0^\circ, 360^\circ]$
- e. Period:  $360^\circ$
- f. Vertical Shift: 2
- g. Range:  $[-2, 6]$

11. Cosine Graph



- a. Amplitude: 2
- b. Reflect over horizontal axis? NO
- c. Phase Shift:  $\pi/6$
- d. Domain:  $[\pi/6, 7\pi/6]$
- e. Period:  $\frac{7\pi}{6} - \frac{\pi}{6} = \pi$
- f. Vertical Shift: 5
- g. Range:  $[3, 7]$

12. Sine Graph



- a. Amplitude: 3
- b. Reflect over horizontal axis? Yes
- c. Phase Shift:  $\pi/2$
- d. Domain:  $[\pi/2, 5\pi/2]$
- e. Period:  $\frac{5\pi}{2} - \frac{\pi}{2} = 2\pi$
- f. Vertical Shift: None
- g. Range:  $[-3, 3]$