10.4

Date:

Objective:

A. Write an equation for the sine curve that has the given information.

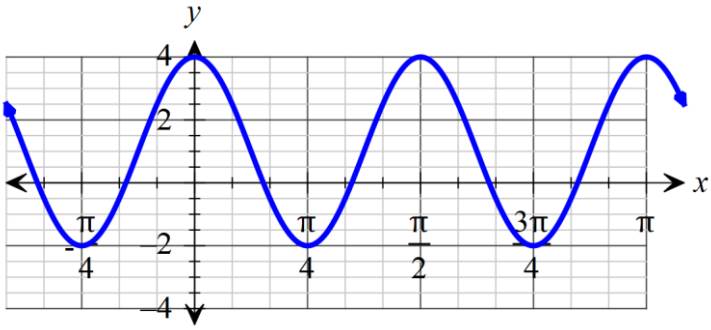
1. Amplitude = 4 Vertical Shift = down 2 Period = π **2.** Amplitude = 3 Phase Shift = right $\frac{\pi}{3}$ Period = $\frac{\pi}{4}$

B. Write an equation for the cosine curve that has the given information.

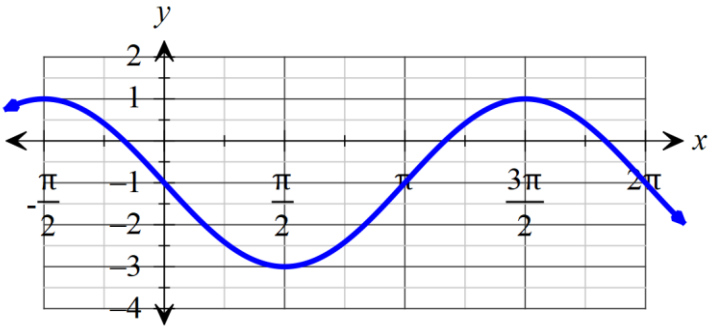
1. Amplitude = 1 Vertical Shift = up $\frac{5}{8}$ Period = $\frac{\pi}{6}$ **2.** Amplitude = 3 Phase Shift = left $\frac{\pi}{6}$ Period = 2π

C. Given the graph, write either a sine or cosine equation.

1. $\cos(\theta)$



2. $\sin(\theta)$



D. Read each story and write the appropriate trigonometric function to model each periodic situation below.

1. At the Bay of Fundy, low tide is at 11:30 am and high tide is at 5:30 pm. The water level varies 50 feet between low and high tide. Write a cosine equation that represents this function.

2. On Mars at the equator, the temperature varies from 70° F to -100° F in a single day. One day on Mars is 24 hors and 37 minutes on Earth. Since it is close, use 24 hours as a day. Write a sine equation that represents this function.

3. A Ferris wheel 100 feet in diameter makes one revolution every 60 seconds. The center of the wheel is 60 above the ground. People load at the bottom of the Ferris wheel. Write a cosine function to model the height of a car on the Ferris wheel at any time *t.*

4. A greater wax moth has hearing capable of sensing high-frequency sounds up to 300,000 cycles per second. Write a sine function representing the sound wave of the pitch. (Amplitude is 1.)