## 10.4

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

1. Amplitude $= 3$   Vertical Shift $= 7$   Period $\pi$

2. Amplitude $= 1$   Phase shift $\frac{\pi}{2}$   Period $\frac{\pi}{2}$

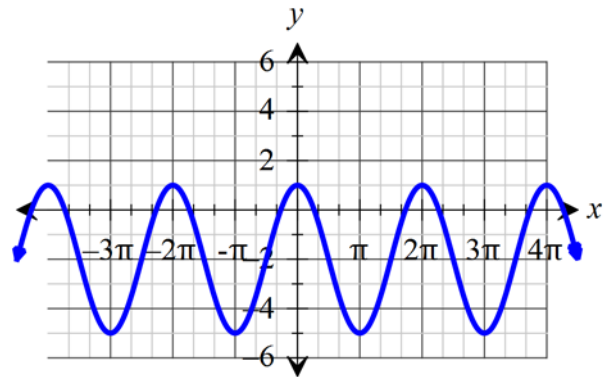Write an equation for the cosine curve that has the given information.

3. Amplitude $= 5$   Vertical Shift $= \frac{5}{6}$   Period $2\pi$

4. Amplitude $= 1$   Phase shift $\pi$   Period $\frac{\pi}{3}$

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

5. Write a sine equation to represent the graph
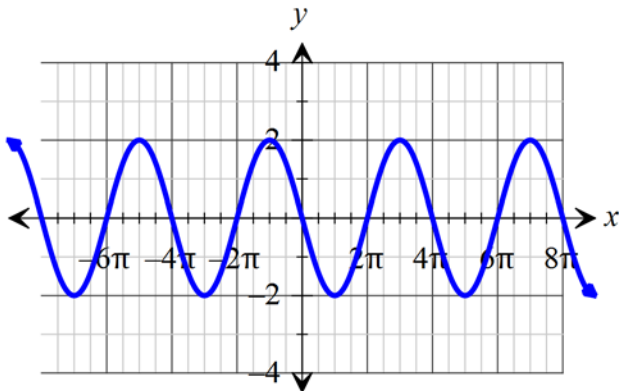
6. Write a cosine equation to represent the graph



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

7. A buoy oscillates up and down as waves go past. The buoy moves a total of 3.6 feet from its low point to its high point, and then returns to its high point every 8 seconds. Write a sine function modeling the buoy's vertical position at any time $t$.

8. A Ferris wheel 50 feet in diameter makes one revolution every 40 seconds. The center of the wheel is 30 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 $t$.

9.  Low tide is at 10:15 am and high tide is at 4:15 pm.  The water level varies 64 inches between low and high tide. Write a cosine function to represent the change in water level.

10. In Buenos Aires, Argentina, the average monthly temperature is the highest in January and the lowest in July.  It ranges from 76°F to 51°F.   Write a cosine function that models the change in temperature according to the month of the year.

11. Low tide is at 6:53 am and high tide is at 12:53 pm. The water level varies 64 inches between low and high tide. Write a cosine function to represent the change in water level.

12. The lowest pitch a human can easily hear has a frequency of 30 cycles per second.  Write a sine function representing the sound wave of the pitch. (Amplitude is 1.)

13. The highest pitch a human can easily hear has a frequency of 20,000 cycles per second.  Write a sine function representing the sound wave of the pitch. (Amplitude is 1.)