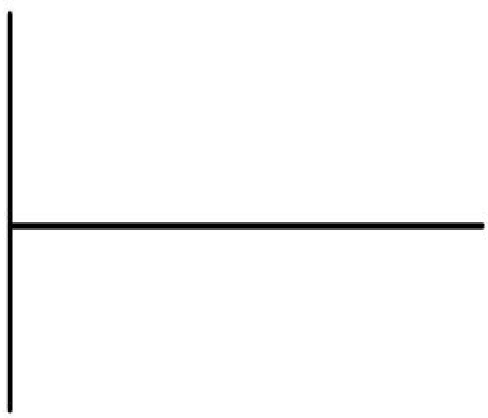
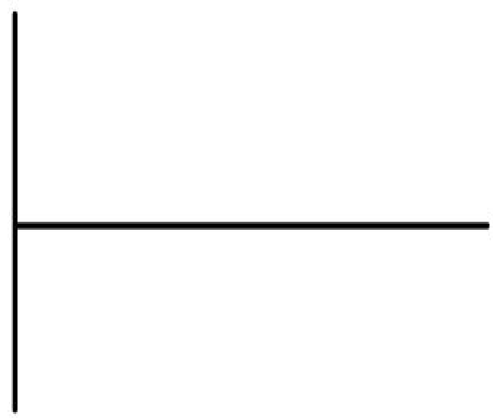
Graph Features Practice Featured Student: Date:

For each of the following, identify the period and amplitude of the equation, then graph one period of the function.

1. $y = \frac{2}{3}sin(x)$

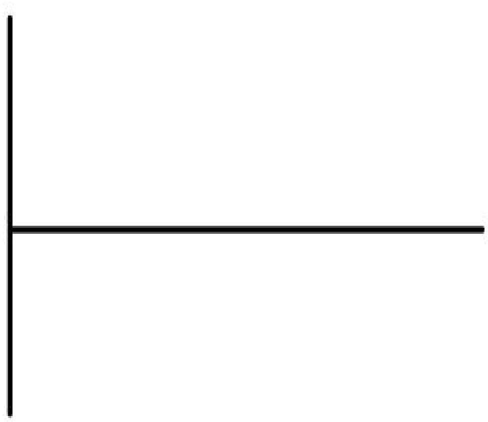
2. $y = 4sin(3x)$

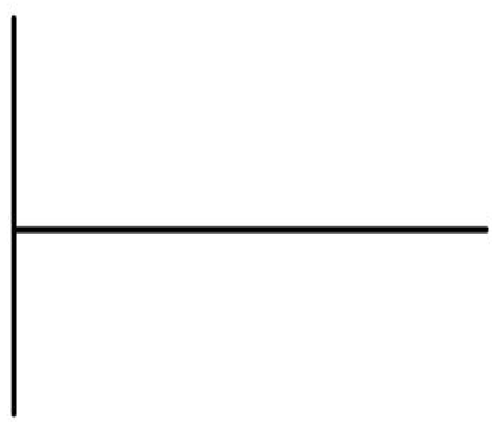




3. $y = 2sin(\frac{1}{2}x)$

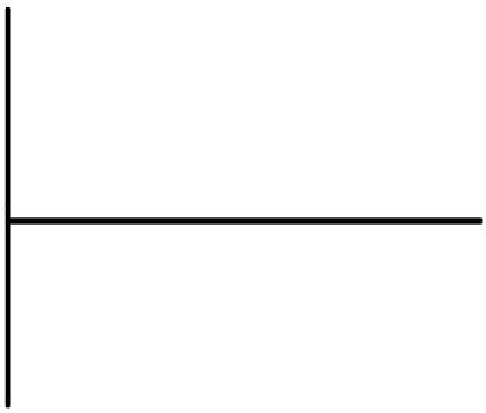
4. $y = \frac{4}{3}sin(2x)$

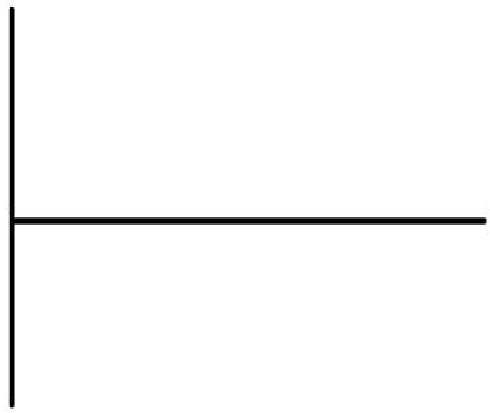




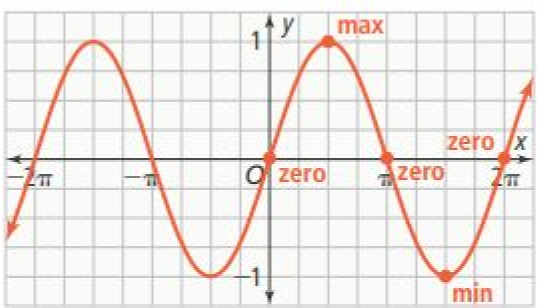
5. $y = -3cos(\frac{4}{3}x)$

6. $y = \frac{3}{5}cos(\frac{2}{5}x)$

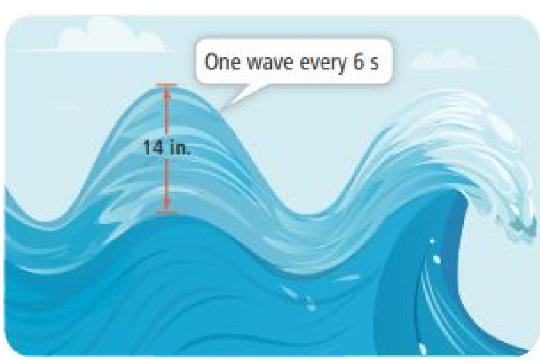




7. **Look for Relationships:** A “five-point pattern” can be used to graph sine and cosine functions. The five-point pattern for the sine function is zero-max-zero-min-zero, as shown below. What is the five-point pattern for the cosine function?



8. A particle in the ocean moves with a wave. The motion of the particle can be modeled by the cosine function. If a 14 inch wave occurs every 6 sec, write a function that models the height of the particle in inches as it moves in seconds. What is the period of the function?

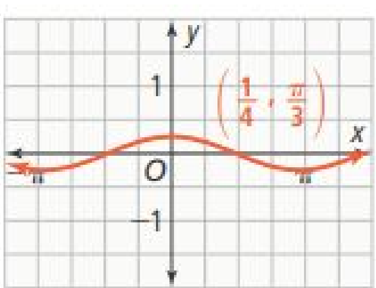


9. The unicycle wheel has a diameter of 2ft. A marker was placed on the wheel at time t = 0sec with a height of h = 0ft. When Esteban is riding the unicycle, it takes $\frac{\pi}{2}$ sec for the unicycle wheel to make one complete rotation.

a. What is the period of the function?
b. What is the amplitude of the function?
c. Write an equation to represent this situation.
d. Graph the function.
e. How many rotations will the unicycle wheel make in 4π sec when Esteban is riding it?

10. The midline for a sine and cosine graph with no transformations will have a midline of y = 0 (the x-axis). How would we have to change the equation $y = A \bullet sin(Bx)$ or $y = A \bullet cos(Bx)$ in order to change the midline of the functions?

11. How do the periods of the two functions below compare?



$f(x) = \frac{1}{4} \cos \frac{\pi}{3} x$