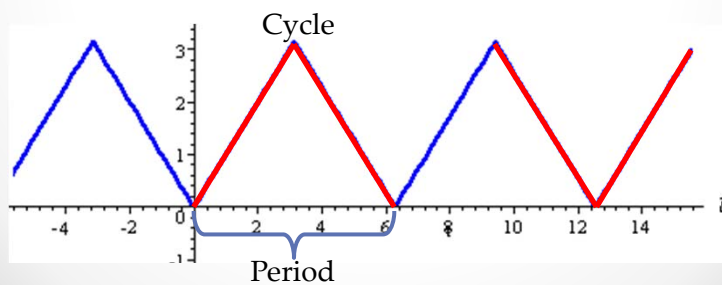


13-1: Exploring Periodic Data

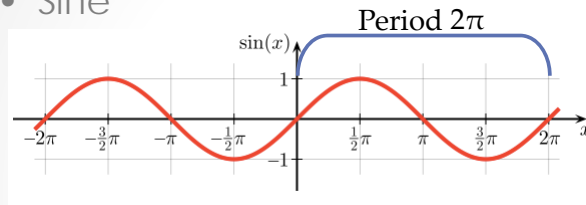
Algebra 2
Mr. Gallo

- Periodic Function
 - Function which repeats a pattern of y -values at regular intervals.
- Cycle
 - One complete pattern
 - Can begin at any point on the graph.
- Period
 - Horizontal length of one cycle

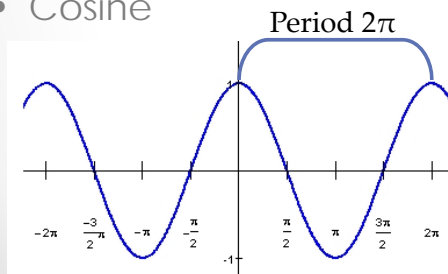


Examples of Periodic Functions

- Sine



- Cosine



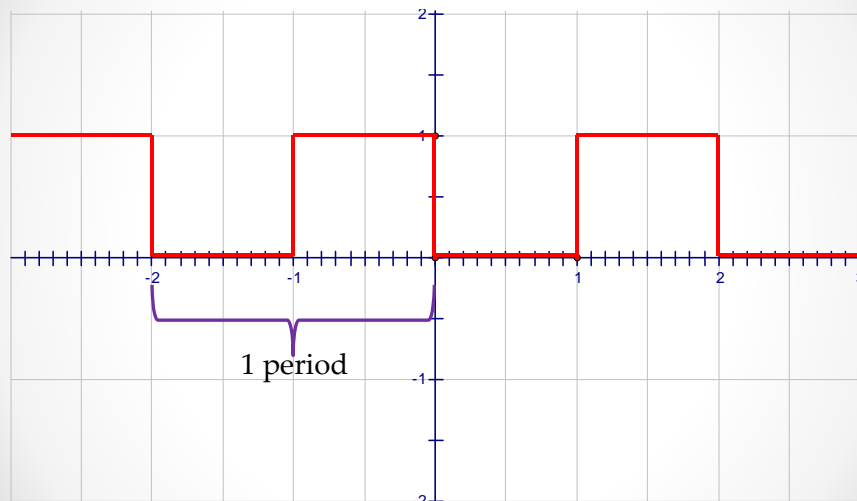
Got It? #1

- From $x = -3$ to $x = 1$ or $x = 0$ to $x = 4$; period -4
- From $x = -4$ to $x = -1$ or $x = 0$ to $x = 3$; period-3

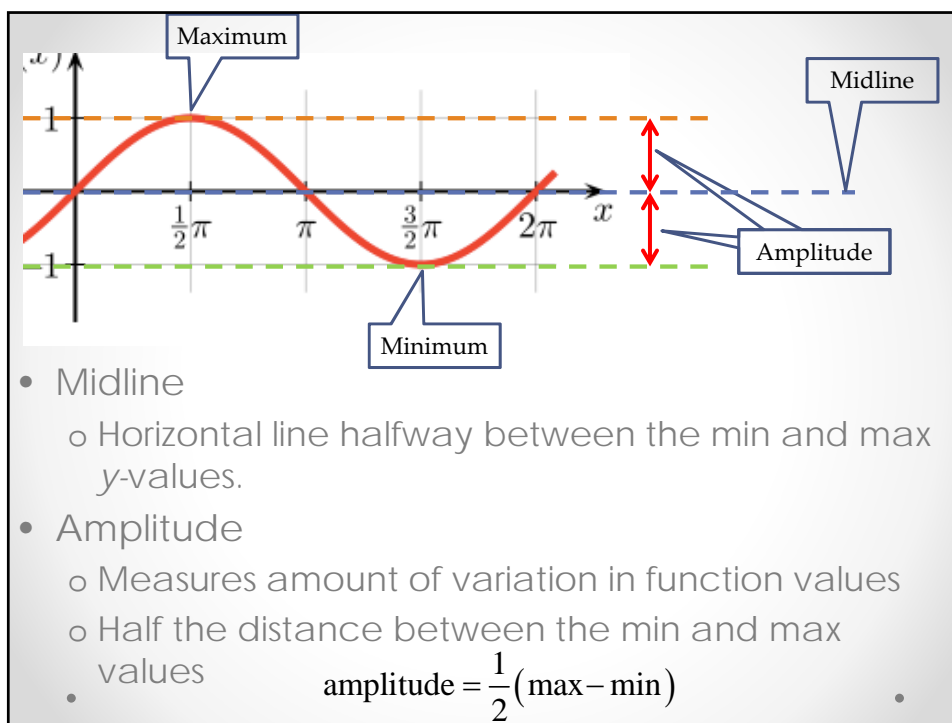
Got It? #2

- no
- yes; period-4

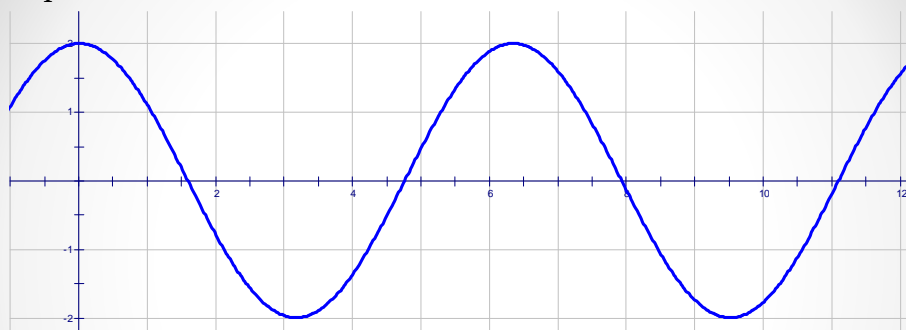
Analyze the periodic function below. What is the period of this function?



From $x = -2$ to $x = 0$; period-2



What is the amplitude of this periodic function? What is the equation of the midline?



Amplitude

$$\text{amp} = \frac{1}{2}(\text{max} - \text{min})$$

$$\text{amp} = \frac{1}{2}(2 - (-2))$$

$$\text{amp} = \frac{1}{2}(4) = 2$$

Equation of Midline

$$y = \frac{1}{2}(\text{max} + \text{min})$$

$$y = \frac{1}{2}(2 + (-2))$$

$$y = \frac{1}{2}(0) = 0$$

- Got It #3
 - a. 1.5; $y = -0.5$
 - b. 1.5; $y = 0.5$

- Got It #4
 - a. Period: 0.006; amplitude: 0.25; $y = -0.75$

Homework: p.832 #7-18, 37, 38, 39