Section 13-1: Periodic Functions

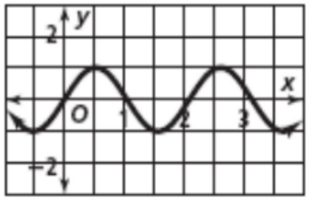
A repeating pattern of y-values at regular intervals.

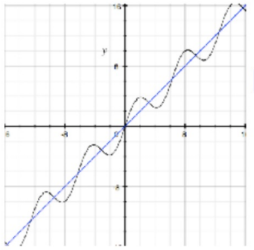
What you should be able to do after this section:

- Tell if a function is periodic or not.
- Find the following of periodic functions:
  - Period
  - Amplitude
  - Equation of the Midline(Axis)

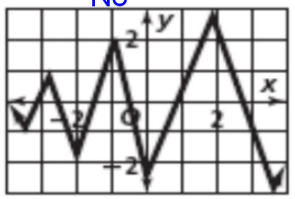
Is each of the below a periodic function?

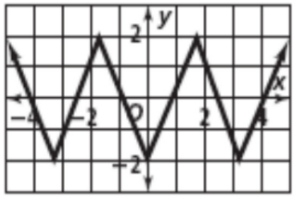
Yes





No



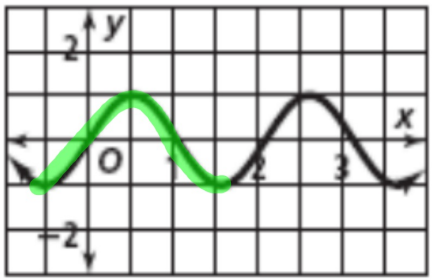


Yes

Sec 13-1 Terms used when discussing periodic functions:

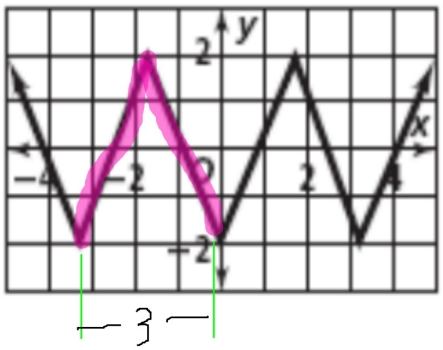
Cycle: One complete pattern

The smallest portion of the graph that could be translated in order to create the entire graph

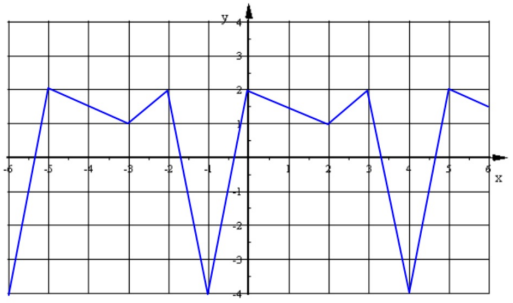


Period: The width of one cycle

Distance from begining of a cycle to the end of the same cycle. (x-value)



Midline or Axis:
The horizontal line that passes through the middle of the graph.

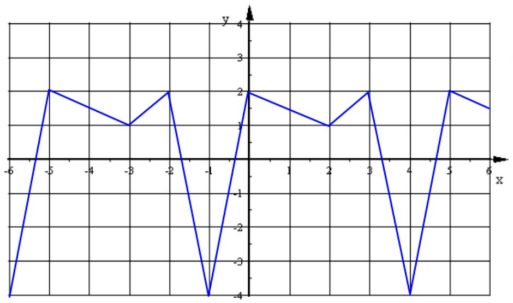


Axis for this graph is:

$y = -1$

$y = \frac{Max + Min}{2}$

Amplitude: Half the total height of the graph.
The vertical distance from the midline to either a max or a min.

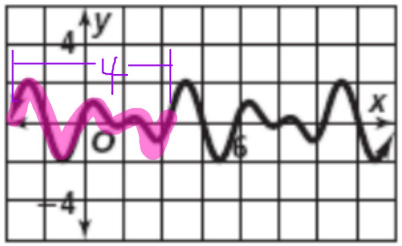


Amplitude = 3

Amplitude = $\frac{Max - Min}{2}$

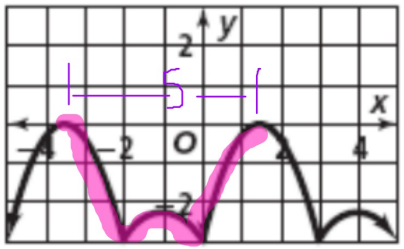
Identify one cycle of each periodic function and find its period.

A.



Period = 4

B.

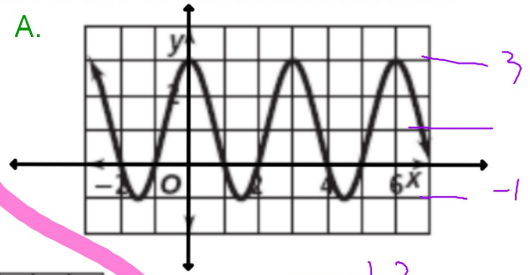


period = 5

Find the period, amplitude, and axis of each periodic function.

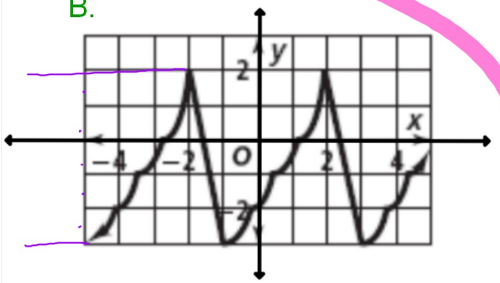
Period = 4
Amp = 2.5
Axis $y = -.5$

A.



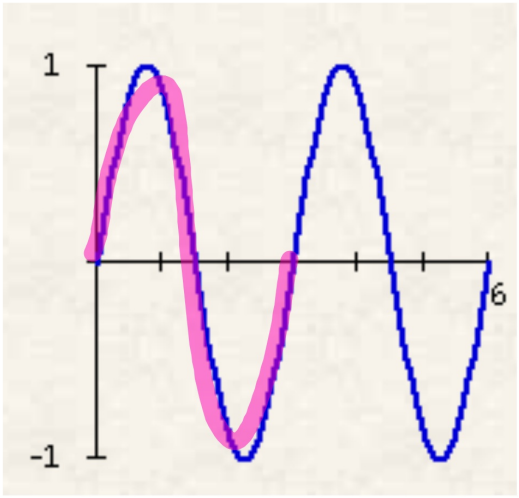
period 3
Amp 2
Axis $y = 1$

B.



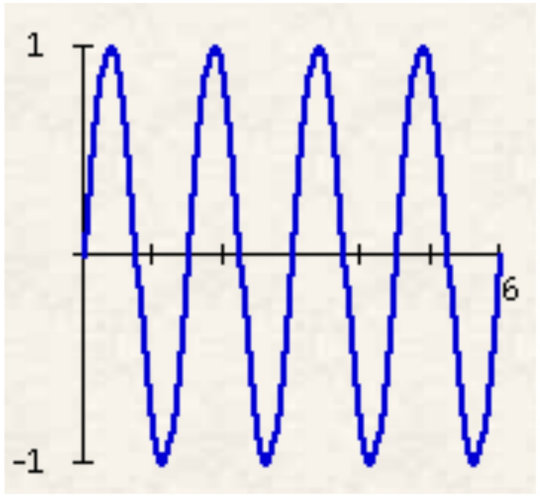
What is the period of each function?

A.



Period = 3

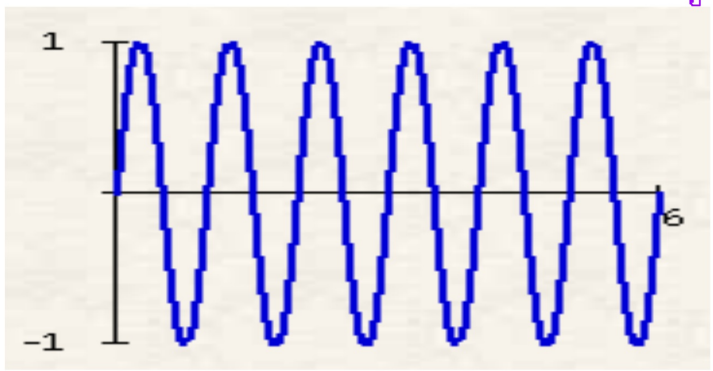
B.



Period = $\frac{6}{4} = 1.5$

What is the period of this function?

Period = $\frac{6}{6} = 1$



What is the period of this function?

Period = $\frac{6}{8} = .75$