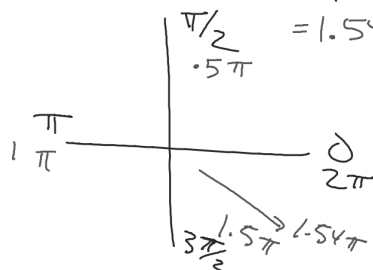State which Quadrant or on which axis the terminal side of each angle is located.

1. $\dfrac{-49\pi}{11} + \dfrac{22\pi}{11} = \dfrac{-27\pi}{11}$

$-\dfrac{27\pi}{11} + \dfrac{22\pi}{11} = -\dfrac{5\pi}{11}$

$-\dfrac{5\pi}{11} + \dfrac{22\pi}{11} = \dfrac{17\pi}{11} = 1.54\pi$

$\dfrac{\pi}{2} = .5\pi$

QUAD IV

2. $4860°$
$-1080°$
$3780°$
$-1080°$
$2700°$
$\vdots$
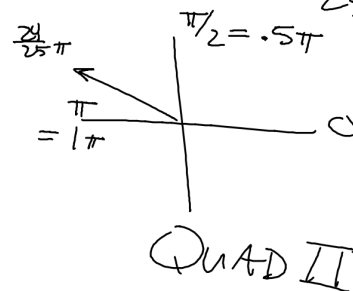$180° \rightarrow$ NEG X-axis

State which Quadrant or on which axis the terminal side of each angle is located.
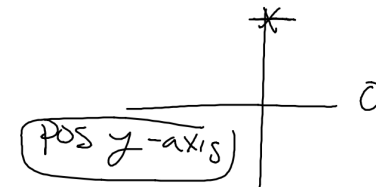
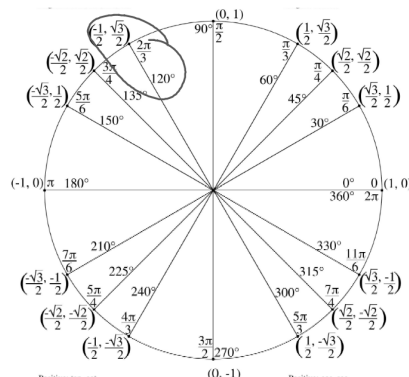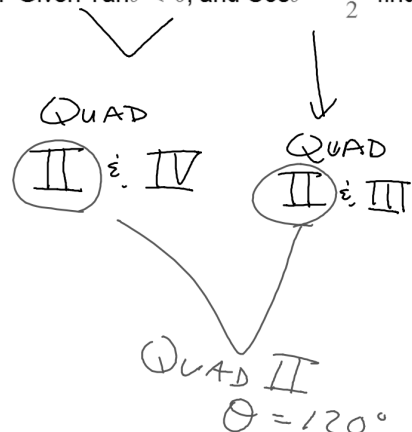3. $\dfrac{374\pi}{25} - \dfrac{50\pi}{25} \ldots\ldots$

$\Rightarrow \dfrac{24\pi}{25}$

$\dfrac{\pi}{2} = .5\pi$

$\dfrac{24}{25}\pi$

$= 1\pi$

QUAD II

4. $\dfrac{-139\pi}{2} = -69.5\pi$

$-69\pi \qquad -.5\pi$

POS y-axis

5. Given $\text{Tan}\theta < 0$, and $\text{Cos}\theta = \dfrac{-1}{2}$ find the measure of θ ($0° \le \theta \le 360°$)

QUAD
II ε. IV

QUAD
II ε. III

QUAD II
$\theta = 120°$

What you should be able to do after this section:
- Tell if a function is periodic or not.
- Identify a cycle
- Find the following of periodic functions:
  - Period
  - Amplitude
  - Equation of the Midline(Axis)

Periodic function: A repeating pattern of y-values at regular intervals.

Cycle: One complete pattern.
The smallest portion of the function that could be translated left and right to create the entire function.

Period: The width of one cycle (x-values)

Midline (also called the Axis):
The (horizontal line) that passes through the middle of the graph.
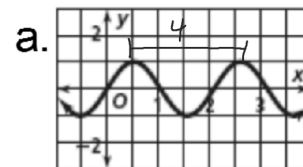
$$y = \#$$

Amplitude:
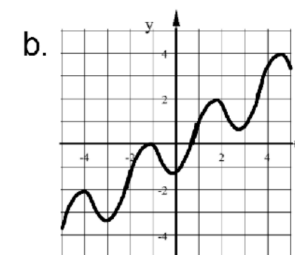The vertical distance from the midline to either the maximum or the minimum.   y-values
OR
Half the total height of the periodic function

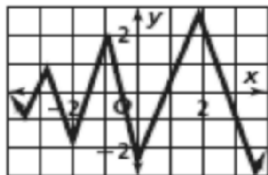1. Is each of the below a periodic function? If no, explain why.
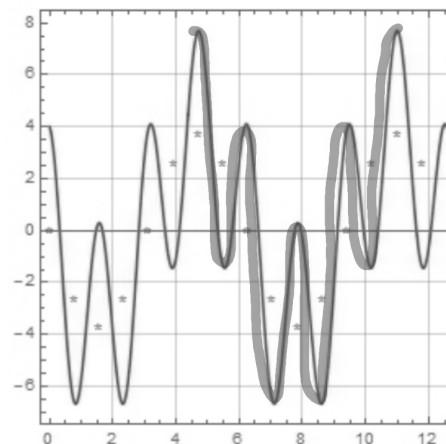
a.

Yes, y values repeat every 4 units

b.

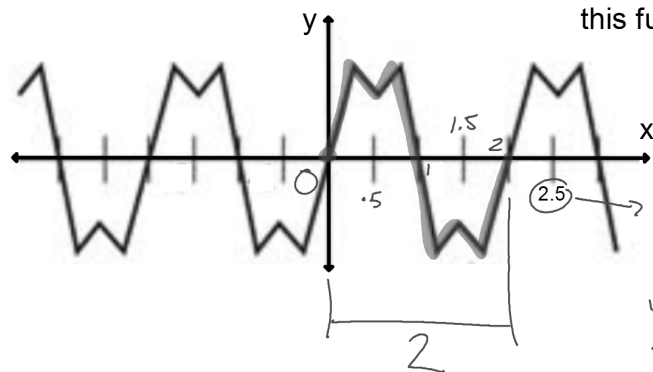No, y-values don't repeat, they increase.

C.

NO, y-values don't repeat

Trace one cycle of this periodic function.

← This is an example of one of many cycles.
all cycles will have the same period.

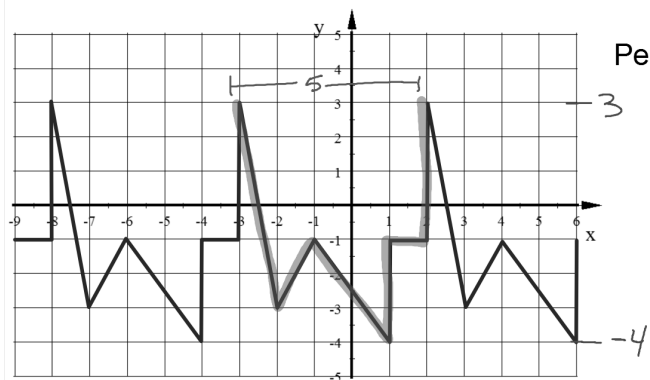---

State the period of this function.

$\boxed{period = 2}$

1.5

.5

2.5 → every mark on the x-axis will represent .5 units

2

If you can't tell by looking at the graph, this is how you find the Midline and Amplitude mathematically.

Midline (Axis): $y = \dfrac{Max + Min}{2}$

Amplitude $= \dfrac{Max - Min}{2} =$ half the total height

Period = 5

Eq of Midline:

$$y = \frac{-4+3}{2} = -.5$$

Amplitude =

$$\frac{3--4}{2} = \boxed{3.5}$$