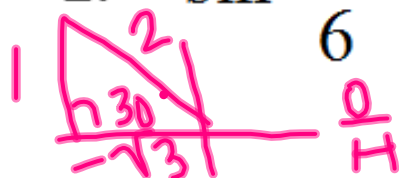# 2.1 Amplitude & Period

~~Warm-Up Monday~~

Find the exact value.

(x, y)
$(\cos, \sin)$

1. $\sin \dfrac{5\pi}{6}$ $\boxed{\dfrac{1}{2}}$

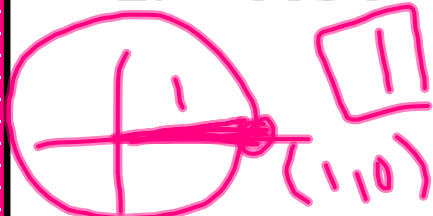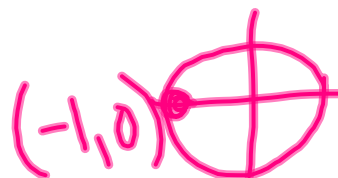3. $\sin \dfrac{\pi}{2}$ Syn   y $\boxed{1}$

$(0,1)$

2. $\cos 0$ x $\boxed{1}$

$(1,0)$

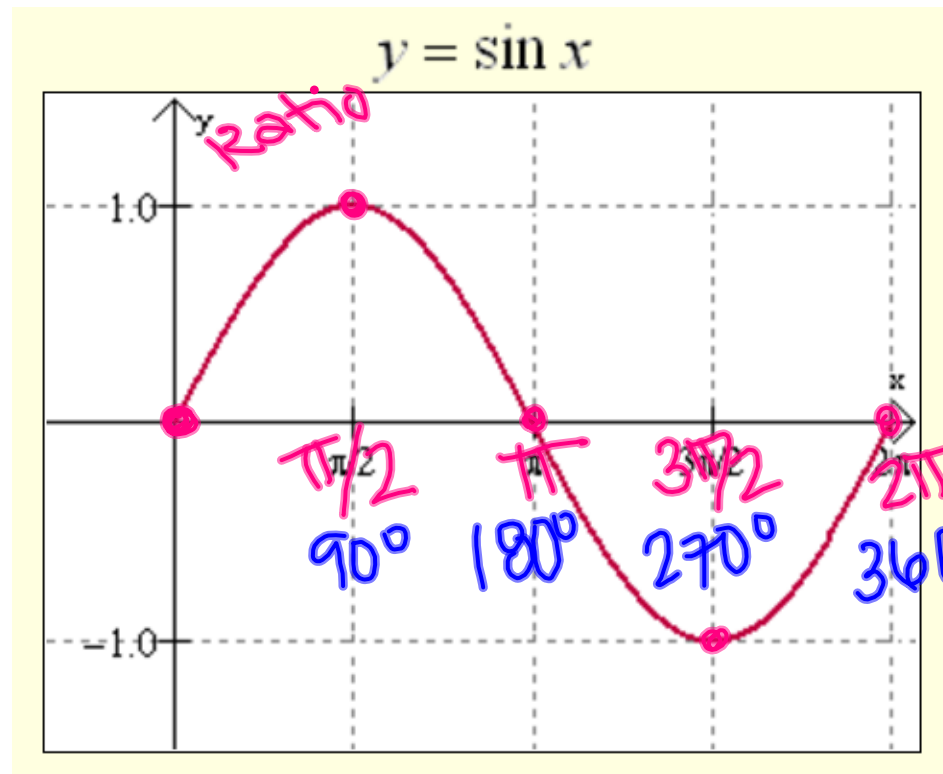4. $\cos \pi$ $\boxed{-1}$

$(-1,0)$

~~About Me:~~
1. How do you usually spend your time after school?
2. Would you rather always be too young or too old?

2.1 Amplitude & Period

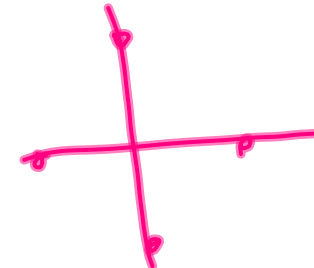**Essential Question:** How do I graph a sine or cosine function?

Sine Parent Function

https://www.desmos.com/calculator/zq2ap5wctn

$$y = \sin x$$

Ratio

$\frac{\pi}{2}$ π $\frac{3\pi}{2}$ 2π
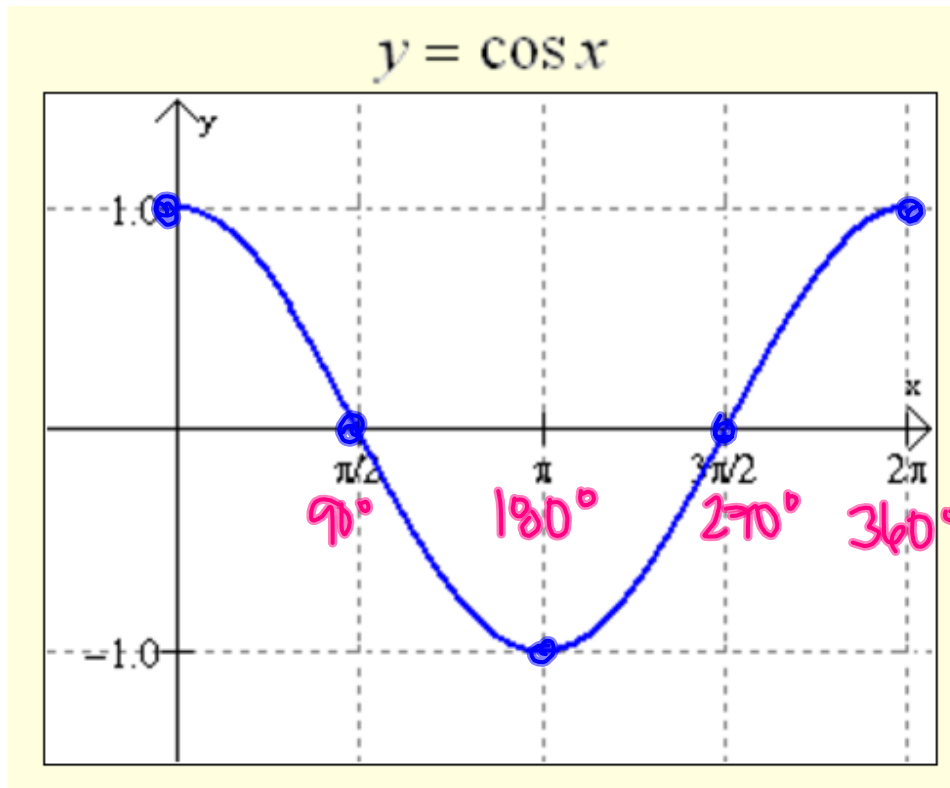
90°   180°   270°   360°

sine →
starts @ middle

Angle Measure

2.1 Amplitude & Period

Essential Question: How do I graph a sine or cosine function?

~~Cosine Parent Function~~

$y = \cos x$

Cosine starts @ high

90° 180° 270° 360°
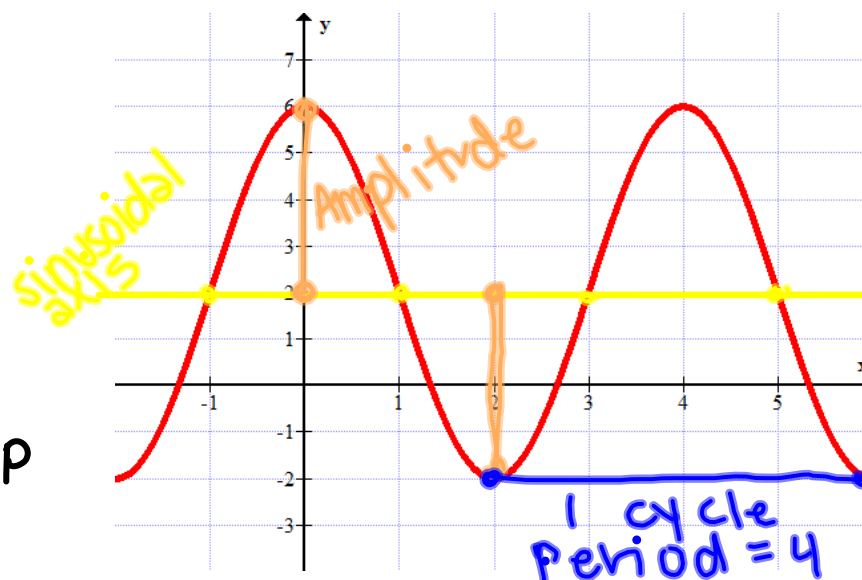
2.1 Amplitude & Period

Essential Question: How do I graph a sine or cosine function?

Sinusoidal Axis:

The midline of a sine or cosine wave

Amplitude:

Distance from the sinusoidal axis to the top or bottom of the graph

Cycle:

Section of a graph before it repeats

Period:

Number of degrees or radians to complete a cycle

sinusoidal axis

Amplitude

1 cycle
Period = 4

1 cycle = 5 pts
2 cycles = 9 pts

2.1 Amplitude & Period

Essential Question: How do I graph a sine or cosine function?

https://www.desmos.com/calculator/xj0syxnnop

2.1 Amplitude & Period

Essential Question: How do I graph a sine or cosine function?

ex#1. Sketch 2 complete cycles. Label all critical points.
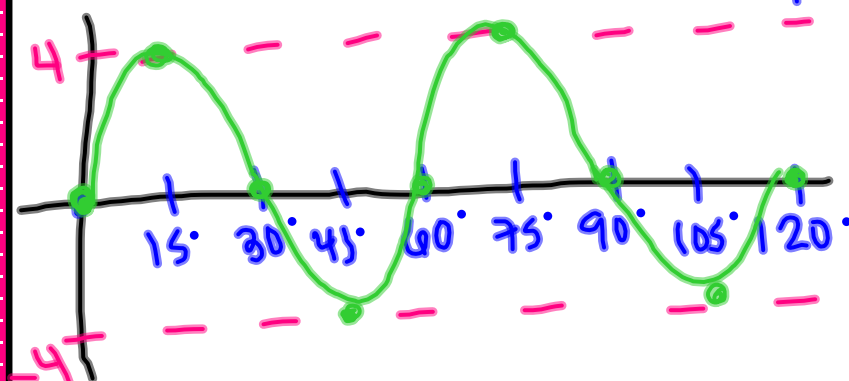
$$y = 4\sin 6\theta \quad \text{(degrees)}$$

$$y = a\sin b\theta$$

Amplitude: 4

$B = 6$ Per: $\dfrac{360}{6} = 60°$

sine → mid.   Critical pts: $\dfrac{per}{4}$

To find amplitude...
coefficient of sin or cos (a)

To find period...

$$\dfrac{360}{B} \quad \text{OR} \quad \dfrac{2\pi}{B}$$

(degrees)   (radians)

4

15° 30° 45° 60° 75° 90° 105° 120°

-4

2.1 Amplitude & Period

Essential Question: How do I graph a sine or cosine function?

ex#2. Sketch 2 complete cycles. Label all critical points.
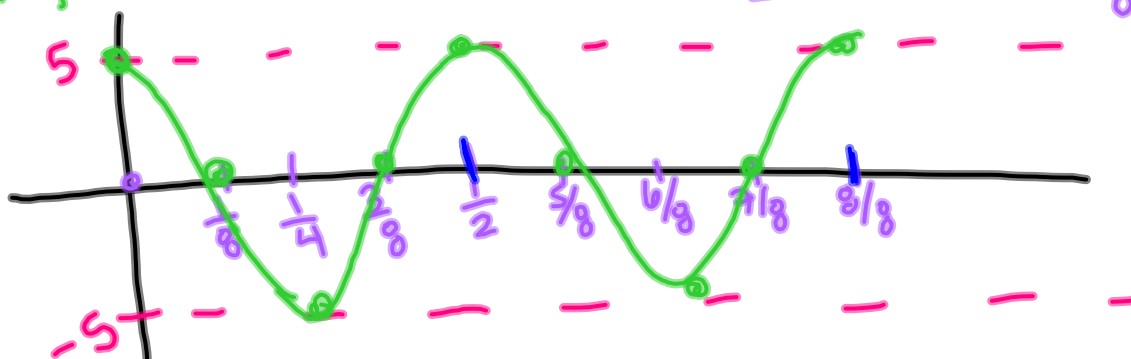
$$y = 5\cos 4\pi(x) \quad \text{(radians)}$$

$\theta \rightarrow$ degrees
$x \rightarrow$ radians

Amplitude: 5

$\cos \rightarrow$ high

$B = 4\pi$ Per: $\dfrac{2\pi}{4\pi} = \dfrac{1}{2}$

CP: $\dfrac{1}{2} \div 4 = \dfrac{1}{2} \cdot \dfrac{1}{4} = \dfrac{1}{8}$ (every $\frac{1}{8}$ new CP)

5

-5

$\frac{1}{8}$ $\frac{1}{4}$ $\frac{2}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{6}{8}$ $\frac{7}{8}$ $\frac{8}{8}$

(degrees) $\dfrac{360}{B}$ (radians) $\dfrac{2\pi}{B}$

2.1 Amplitude and Period   Name:_____

○ 9 points

Sketch two complete cycles of each graph. Label all critical points.

1. $y = 3\sin 5\theta$ (degrees)

2. $y = 12\cos\dfrac{3}{4}\theta$ (degrees)

3. $y = 3\sin\dfrac{\pi}{4}x$ (radians)

4. $y = 7\cos 2x$ (radians)

5. $y = 20\cos\dfrac{1}{3}x$ (radians)

6. $y = 5\sin 4\pi x$ (radians)

7. $y = 8\sin\dfrac{\pi}{5}x$ (radians)

8. $y = 10\cos\dfrac{1}{6}x$ (radians)

2.1 Amplitude & Period

Essential Question: How do I graph a sine or cosine function?

~~Closing~~

You will receive either a graph or an equation. Find your match!! On your weekly sheet, write down the LETTER & NUMBER of you and your partner's equation and graph.