**CCGPS Precalculus Name
Unit 2 Study Guide: Graphing Trigonometric Functions**

1. **Know how to graph parent graphs and find the characteristics for sine, cosine, tangent, secant, cosecant, cotangent, cos-1**$θ$**, sin-1**$θ,$ **and tan-1**$θ$**.**
2. **Identify characteristics and graph two cycles of the transformed graphs.**
3. y = -cos(2x) + 5

Amplitude:

Period:

Sinusoidal Axis(midline):

Phase shift:

Frequency:

Domain:

Range:

1. y = -3 + 4sin(3(x + π))

Amplitude:

Period:

Sinusoidal Axis:

Phase shift:

Frequency:

Domain:

Range:

1. **Write Equations from a graph.**

 

1. **Creating graphs given information**
2. Write an equation of cosine that fits the following characteristics.

Amp:2 period: $\frac{2π}{3}$ phase shift: -$ π$ midline: y= -$ \frac{7}{8}$

1. **Applications of Trig Functions.**

There is a surfer floating on the ocean. She sees a wave that she will crest 5 seconds from now (t=0). The crest of the wave is 20 feet above the ocean floor. 12 seconds after she crests the wave, she will reach the trough at 4 feet above the ocean floor.

1. Write an equation to represent the surfer’s periodic motion.
2. How far above the ocean floor is she now?
3. How far above the ocean floor will she be 2 minutes from now?
4. When will the surfer be at 15 feet above the ocean floor?
5. For how long at one stretch can the surfer stay below 10 feet above the ocean floor
6.

Write a sinusoidal equation with the given characteristics.

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| 1. Sine Curve Max is 20 ft Min is 2 ft Period is 2.5 minutes  | 2. Starts at a minimum Sinusoidal axis is y=112 Amplitude is 27 Distance between a consecutive max and min is 10 | 3. Starts at the center and is falling Min is -10 Amplitude is 25 Period is 12π |

1. Inverse Trig Functions

1. Graph the parent graphs for the three inverse trig functions.

1. Explain why the domain and range are limited to the values they are.
2. Graph y = **sin-1**$ 2θ$**+**$π$
3. Graph y = 2**tan-1**$ (θ+ $1)