

## 7.2 General Sinusoids Notes

EQ: What is the effect of a shift on a sinusoid?

General Equation

$$y = A \sin B(x - D) + C \text{ or } y = C + A \sin B(x - D)$$

Steps for graphing

- Mark the middle value on the y-axis (\_\_\_ value)
- Mark the highest and lowest values on the y-axis by adding/subtracting the \_\_\_\_\_ to the middle value
- Mark the "starting" point on the x-axis (\_\_\_ value)
  - The graph doesn't actually start here, it continues in the negative direction, this is just the x-value that matches  $x=0$  on the parent function
- Find the period (\_\_\_\_\_) and add it to the D value. This is where 1 cycle will end. Add it again if you need 2 cycles.
- Find the spacing of the critical points (\_\_\_\_\_\_). Add this to the D value and keep adding until you reach the end of the cycle. You may need a common denominator for fraction values
- Mark the critical points (high, middle, low) on your graph. If it's a sin graph, the first critical point at D is \_\_\_\_\_. Then your next point is \_\_\_\_\_. If it's a cosine graph, the first critical point at D is \_\_\_\_\_. Then your next point is \_\_\_\_\_.
- A negative in front of A will reflect your graph. Sine will still start in the middle, but then will go down. Cosine will start at the bottom.

Graph 2 cycles of

$$1. y = -3 + 5 \cos \frac{2}{3}(\theta + 150)$$

$$2. y = 5 - 6 \cos \frac{\pi}{5}(x - 2)$$

$$3. y = -\sin \left( 3x + \frac{\pi}{2} \right) + 1$$

Summary