**Lesson 50**

* Relationships between Radians and Degrees: radians = 360°, 1 radian = , 1° = radians
* Convert Radians to Degrees: Multiply by
* Convert Degrees to Radians: Multiply by
* The UNIT CIRCLE is a circle with radius of 1 unit, centered at the origin of a coordinate plane.
* Angles in STANDARD POSITION on the unit circle have their vertex at the origin.
  + One side of the angle, called the INITIAL SIDE, is on the positive x-axis.
  + The other side, called the TERMINAL SIDE, determines the measure of the angle, and is measured counterclockwise.

**Lesson 51**

* Points (x, y) on the unit circle:

|  |  |
| --- | --- |
|  |  |

**Lesson 52**

* **Arc length** when is in radians:
* **Sector area** when is in radians:

(continued on next page…)

**Lesson 53**

* **Transformations of trig functions:** 
  + ***a*** gives **amplitude** (vertical stretch)
  + ***b*** gives **period** (horizontal stretch), use the formula: period =
  + ***h*** gives the horizontal shift, called **phase shift**
  + ***k*** gives the **vertical shift**
    - ***We are not going to worry about h and k this year. Just the amplitude and period!***

Complete the following table of trig values, and use it to graph the function.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| (radians) | 0 |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |



Amplitude:

Period:

Critical Values:

Domain: Range:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| (radians) | 0 |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |



Amplitude:

Period:

Critical Values:

Domain: Range:

**Steps to graph trig functions:**

**1.** Identify amplitude and calculate the period.

**2.** If there is a vertical shift, sketch a line at , along which the graph will oscillate.

**3.** Identify the start and end points of one period, and then the middle and quarter points. Graph the 5 critical values.

**4.** Connect the critical points with a sine/cosine wave.

**5.** Continue the pattern for additional periods if there is space on the graph.

**Steps to get critical values:**

1. Calculate the period. This will be your end point (the x-value).

2. Divide the period by 2. This will be your middle point (the x-value).

3. Divide the middle point value (from step 2) by 2. This will be the value between the start value and the middle value.

4. Take the values from step 2 and step 3 and add them together. This is your point between the middle point and

the end point.