Precalculus Learning Goals - Week 7

This week we’ll review for your exam, and then start our section on Trigonometry.

The general goals for the section Trigonometry are as follows. At the end of this section, students should be able to:

- Transition between interpretations of trig functions on triangles, the unit circle, and as graphs.
- Compute all trig and inverse trig functions for common values.
- Define inverse trig functions and explain their domain and range.
- Use trig functions to solve for missing quantities involving triangles and model periodic motion.
- Use trigonometric identities to simplify and rewrite expressions.

More specifically, at the end of this week you should be able to:

- Describe angles on the unit circle – locations and coordinates of common angles (multiples of $\pi/6$ and $\pi/4$), and approximate locations and coordinates of nonstandard angles.
- Explain the relationship between degrees and radians, and develop a conversion formula.
- Solve for missing pieces of information on the unit circle (e.g., given sine and quadrant, find cotangent).
- Define the six basic trigonometric functions on triangles and for any angle in the unit circle.
- Explain why trig functions are periodic.

Sample Problems. Here are some sample problems, of the type that you would do to demonstrate that you’ve learned the material. These are not the only types of problems you may see – they’re just a sample.

- What is $\sin(-\frac{7\pi}{6})$?
- What is an angle in $[\pi, 2\pi]$ that is coterminal with $\frac{38\pi}{4}$?
- Are there any values at which both the tangent and the cotangent function are undefined?
- Suppose $\cos(t) = -\frac{4}{5}$ and $\sin(t) = \frac{3}{5}$. What is $\cos(-t)$?
- On Planet Zook, they measure angles in zooks. A full circle is 200 zooks. Find a formula to convert radians to zooks.