Precalculus Learning Goals - Week 11

This week we're going to continue 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:

- Explain what trigonometric identities are.
- Derive new trigonometric identities from old ones.
- Use trigonometric identities to solve trig equations.
- Use trigonometric identities to compute trig functions evaluated at non-standard angles.

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.

- Show that $\tan^2 x + 1 + \tan x \sec x = \frac{1+\sin x}{\cos^2 x}$.
- Solve $2\cot^2 x + \csc^2 x - 2 = 0$.
- Explain why the Pythagorean identity $\sin^2 x + \cos^2 x = 1$ is true.
- Compute $\cos(\frac{\pi}{12})$ without a calculator.
- Bonus: Solve $|\sin t| = \frac{1}{2}$. Solve $\sin(|t|) = \frac{1}{2}$.