

Standards for PreCalculus II Math 154

This course is a continuation of Math 153 with emphasis on trigonometric functions.

Pre-Requisite Skills

Students will be able to

- Demonstrate competency in using functional notation;
- Work with linear, quadratic, exponential, and logarithmic functions;
- Demonstrate understanding of the concepts of “inverse” and “composition.”

Performance Skills

Students will be able to:

- Model real phenomena using trigonometric functions;
- Convert between radian and degree measures;
- Analyze the effects of transformations on the graphs of trigonometric functions;
- Use and manipulate inverse trigonometric functions;
- Use trigonometric formulas, such as,
 - Pythagorean identities;
 - Sine and cosine of a sum of angles and half angles;
 - Law of Sines and the Law of Cosines;
- Locate and determine certain features of trigonometric functions and their inverses, such as,
 - Domains/ranges;
 - Intercepts;
 - Asymptotes;
 - Maxima and minima;
 - Intervals of increase and decrease;
- Work with a variety of “prototype functions, specifically,
 - (Polynomial);
 - (Rational);
 - (Radical).

Note: Outcomes listed in parentheses indicate that their actual placement in either Math 153 or Math 154 could depend on the chosen textbook.

Technology Skills

Being able to use a graphing calculator to intelligently extract information regarding functions is critical. In particular,

Students will be able to

- Use a graphing calculator to help construct and recognize complete graphs of trigonometric functions. (Being able to intelligently adjust the viewing window as well as place the calculator in the right mode (degree v. radian) is critical.);
- Use the graphing calculator to extract numerical information regarding functions, specifically,
 - Function/expression values;
 - Roots/intercepts;
 - Maxima/minima;
 - Points of intersection;
- Find the above numerical data to specified accuracy.

Pedagogical Standards

Pedagogical Standards

Instructors should attempt to instill certain vital problem-solving and communication skills in their students. The Mathematics Department wishes all students who successfully complete this course to possess the following skills.

Students will be able to

- Apply appropriate technology to solve problems;
- Model phenomena mathematically;
- Work cooperatively with others;
- Read and understand complex mathematical problems;
- Describe the methods used to approach a problem;
- Express solutions in written and oral form.