Graphs of Functions: Shifting and Scaling

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Overview

There are two objectives in this lab: to learn to enter mathematical expressions in Maple and to recognize translations and scalings of common mathematical functions. Entering expressions in Maple is not difficult, but does require some practice. The ability to recognize shifts and scalings of basic functions is useful throughout mathematics.

Maple Essentials

- The *StandardFunctions* maplet is started from the Maple 9.5 user interface under the Tools menu:

    Tools → Tutors → Precalculus → Standard Functions ...

- The *Shift* maplet is available from Texas A & M University at the URL:

    `http://calclabs.math.tamu.edu/maple/maplets/Shift.maplet`

Preparation

Read the material in your textbook about translations of graphs (pages 45 - 46 of Anton).

Activities

- Start a Maple session.

- Launch the *StandardFunctions* tutor.
  Work through several of the following complete sets of Exercises on page 48 of Anton:

Exercises	Function	Maple Syntax
# 5 – 12	$y = x^2$	`x^2`
# 13 – 16	$y = \sqrt{x}$	`sqrt(x)`
# 17 – 20	$y = \frac{1}{x}$	`1/x`
# 21 – 24	$y = |x|$	`abs(x)`
# 25 – 28	$y = \sqrt[3]{x}$	`x^(1/3)`

- Start the *Shift* maplet.
  Follow the directions in the box below the graphics box in this interface. Work with this tool until you become proficient at identifying seven basic functions and their shifts.

- If you are using a computer in a SAM lab, remember to logout at the end of the lab session.

Assignment

There is no assignment to be turned in this week. This material will be included on Maple Quiz 1.