MATH 113 – MAPLE ASSIGNMENT 1 – DUE 13 FEBRUARY 2007

Answer all of the following questions. You may work in groups of no more than three persons to complete this assignment. One copy of the completed assignment is to be turned in for each group. **Each member of the group must sign the assignment.**

You are expected to turn in a printout of a MAPLE worksheet containing the MAPLE commands and output that you used to complete the assignment. You must also include text explaining what you are doing (this can be typed onto the MAPLE worksheet or written by hand on the printout). Include any hand calculations.

This assignment is due by the end of class on Tuesday 13 February 2007. **No late assignments will be accepted under any circumstances whatsoever.** If you are not finished with the assignment by the due date, you should turn in what you have for partial credit. You may turn in the assignment early if you wish.

1. (a) (6 pts.) Define the function $f(x) = x^3 - 5x$ as a MAPLE procedure as described in class. Use MAPLE to plot the graph of $f(x)$ for x in the horizontal windows $[-10, 10]$ and $[-3, 3]$. (Hint: Type `help(plot)` for information and examples on how to use the `plot` command.)

   (b) (4 pts.) Define the function $g(x) = \dfrac{5x^3 + 9x^2}{2x^5 + 3x^2}$ as a MAPLE procedure as in part (a) and plot the graph of $g(x)$ in the horizontal window $[-2, 2]$ and the vertical window $[-5, 5]$.

2. In this problem, we will use MAPLE to examine $\lim\limits_{x \to 1} \dfrac{3x^2 - 7x^{3/2} - \sqrt{x} + 5}{x - 1}$.

   (a) (6 pts.) Define the function $h(x) = \dfrac{3x^2 - 7x^{3/2} - \sqrt{x} + 5}{x - 1}$ in MAPLE and evaluate it at the values $x = 0$, 2, .5, 1.5, .9, 1.1, .99, 1.01. Use this information to guess the value of the limit.

   (b) (4 pts.) Find the correct value of the limit by using MAPLE's `limit` command.