MATH 114 – MAPLE ASSIGNMENT 1 – DUE 12 JULY 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 at the beginning of class on Thursday, July 12, 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. (5 pts. each)

(a) Use MAPLE to define the function $f(x) = x + \sin^2(\pi x)$. Plot this function in the horizontal viewing window $0 \leq x \leq 2$.

(b) Use MAPLE and the disk method to find the volume of the solid obtained by rotating the region between the curve plotted in part (a), the x–axis and the line $x = 2$ about the x–axis. If MAPLE cannot compute the integral explicitly, then give the answer correct to ten decimal places.

(c) Use MAPLE to find the arclength of the curve you plotted in part (a). If MAPLE cannot compute the integral explicitly, then give the answer correct to ten decimal places.

(d) Use MAPLE to find the area of the surface obtained by revolving the curve in part (a) about the y–axis. If MAPLE cannot compute the integral explicitly, then give the answer correct to ten decimal places.