

MATH 113 – MAPLE ASSIGNMENT 1 – DUE 7 JUNE 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 beginning of class on Thursday 7 June 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.

For each of the following problems, assume that the position s of a body (measured in meters) at time t (for $0 \leq t \leq 3$) is given by the function $s(t) = t^4 - 6t^3 + 12t^2 - 10t$.

(4 pts. each)

1. Define the function $s(t)$ given above as a MAPLE procedure and plot the graph of this function using the MAPLE `plot` command in the horizontal viewing window `t=0..3`.
2. Using MAPLE's `D` command, find expressions for the velocity v and acceleration a of the body as functions of t . (For example, to find the derivative of the function g , type `g:=t->D(f)(t)` at the MAPLE prompt.) Plot these functions as well as a function giving the speed of the body in separate plots using same horizontal viewing window as in Problem 1.
3. By inspecting the graphs you made in Problem 2, answer the following questions:
 - (a) When is the body moving left/right? At what times is the body at rest? At what times does it change direction?
 - (b) When is the body speeding up/slowing down?