This is due with Problem Set 1 on 2/11/2005 at recitation.

Supplemental Question 1

To help us understand your background with differential equations, please tell us when you took Differential Equations (18.03) and who the lecturer was.

During our first lecture we introduced some concepts that were presented from a somewhat different perspective during your differential equations course. We want you to understand the relationship between the material as it was presented then and the material as we will think and talk of it in Modeling, Dynamics and Control 1. Each concept has a term to identify it.

Five of the concepts that were introduced are:

1. homogeneous
2. time invariant
3. characteristic equation
4. time constant
5. first order system

Please tell us in no more than a few sentences each what you think these terms mean (that is, describe the associated concept).

Now go back to your 18.03 notes and find when these five concepts were introduced. For each of the five, how did the assigned meaning differ if at all? Was a different term used to name the concept?

A number of equations have been introduced in lecture. They were introduced with a particular notation (use of y, C, s, and so on) Among them are

$$\tau\frac{dy}{dt} + y(t) = 0$$

$$y(t) = Ce^{st}$$

and

$$(\tau s + 1) = 0$$

Find the corresponding equations in your 18.03 notes and write them here in the notation used in 18.03.