Homework #8 (ASEN5010, Spring 2005)

(Due at Start of Class on Wednesday, 30 March 2005)

Solve Text Problem 7.1

Hint for Problem 7.1(a):

Step 1: Use Equations (6.48) and (7.7).

Step 2: In doing so, express $\mathbf{J}\dot{\omega} + [\omega][\mathbf{J}]\omega = \mathbf{M}$ and equation(7.7) into the following form

$$\begin{aligned} \dot{\omega} &= \mathbf{J}^{-1}(\mathbf{M} - [\omega][\mathbf{J}]\omega) \quad \Rightarrow \quad \dot{\mathbf{y}}_1 = \mathbf{f}(\mathbf{y}_1, \mathbf{M}) \\ \dot{\theta} &= f(\omega, \theta) \quad \Rightarrow \quad \mathbf{y}_2 = \mathbf{f}(\mathbf{y}_1, \mathbf{y}_2) \end{aligned} \tag{1}$$

Step 3: Use "ode45" of Matlab to integrate the coupled equations of motion.

Make sure you read "doc ode45" before you launch on solving the problem

If you are not sure what you are doing, please ask someone, including me!