ME EN 534
Homework #5

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1. Complete Problem 10.12 from the text. The box is of mass *m*.

2. Complete Problem 10.10 in the text. The body is composed of slender rods. Let $m = 0.5$ kg and $L = 0.72$ m. I recommend using a spreadsheet, MATLAB, or some other software package to carry out the calculations.

3. A rigid body has an inertia matrix $[I] = \begin{bmatrix} 5 & 0 & 0 \\ 0 & 10 & -4 \\ 0 & -4 & 10 \end{bmatrix}$. Find the principal moments of inertia and principal axes, and a coordinate transformation that rotates the original axes into the principal axes. Do all calculations by hand and show all of your work.

4. Find the principal moments of inertia about O of the box described in Problem 1, above. Sketch the principal axes. You may use MATLAB or some other package to perform the calculations.

5. Find the principal moments of inertia of the body shown about point O. Use a table or some other resource to find the original inertia matrix about O, and then use MATLAB or some other package to find the principal moments of inertia.