ENDS 231. Assignment #6

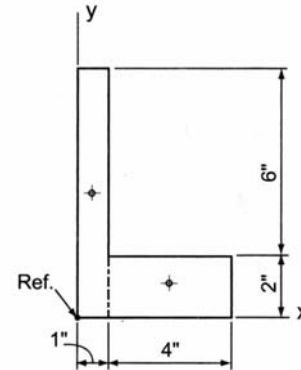**Date:** 2/27/07, *due 3/6/07*   *Pass-fail work*

Problems: from Onouye, Chapters 7 & 8.
*Note: Problems marked with a * have been altered with respect to the problem stated in the text.*

7.3.2 Find the I_x and I_y for the L-shaped cross-section shown.

*Use the negative area method.

Partial answers to check with: $\hat{x} = 1.75$ in, $\hat{y} = 2.5$ in,
$\qquad I_x = 81.33in^4, I_y = 36.33in^4$

Problem 7.3.2

7.3.4 A heavily loaded floor system uses a composite steel section as shown. A C15 × 40 channel section is attached to the top flange of the W18 × 50. Determine the I_x and I_y about the major centroidal axes using the cross-sectional properties given in the steel tables for standard rolled shapes (see Appendix).

| ***Also calculate radius of gyration, r_x and r_y.** |
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Partial answers to check with: $\hat{x} = 0$, $\hat{y} = 12.9in.$,
$\qquad I_x = 1309\ in.^4, I_y = 389\ in.^4$
$\qquad r_x = 7.03\ in, r_y = 3.83\ in$
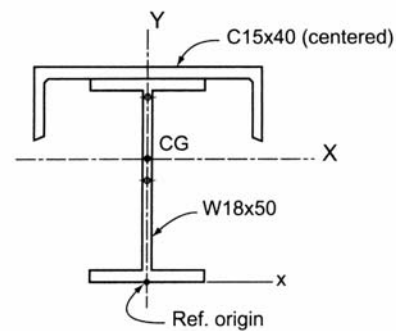
Problem 7.3.4

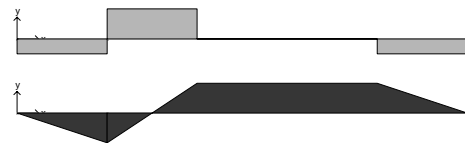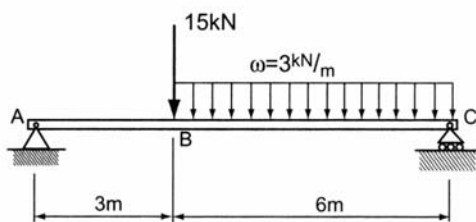| ***Construct the load, shear and bending moment diagram for the following using the semigraphical method, and verifying key values with the equilibrium method. Identify maximum quantities and locations of shear and bending moment. Multiframe2D may be used *only* to verify calculations.** |
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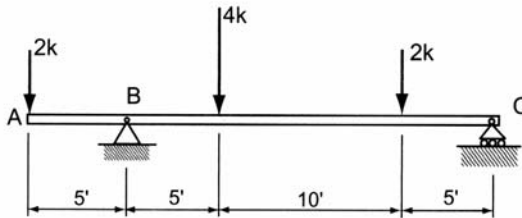
8.4.1

Partial answers to check with:
$\qquad V_{max} = +4\ k, M_{max} = +10\ ^{k\text{-}ft}$

Problem 8.4.1

8.4.4

Partial answers to check with:
$\qquad V_{max} = -17\ kN, M_{max} = 48.2\ ^{kN\text{-}m}$

Problem 8.4.4