ME 354 Homework #1 Due: January 18th, 2007 before class.

1) Dowling, Problem 1.8. Note: $S = \sigma_{bending}$ in Fig. A.12(c).

2) Dowling, Problem 2.2.

3) Samples from batch no. 2007-1 of polycarbonate channels were tested for stiffness, i.e. Young's modulus. The following frequency distribution for stiffness measurements was obtained: 23 samples had 2.480 GPa; 35 samples had 2.440 GPa; 40 samples had 2.400 GPa; 33 samples had 2.360 GPa; and 21 samples had 2.320 GPa. What is the average stiffness and standard deviation for the batch?

4) Find the moment of inertia about the *x*-axis I_x for a T-beam with cross-section shown below. Dimensions of the flange width *w* and flange thickness *t* are shown in Figure 1. Your answer should be in terms of *w* and *t*.

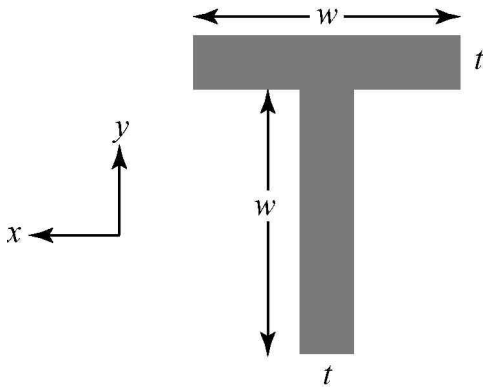

Fig. 1. T-beam