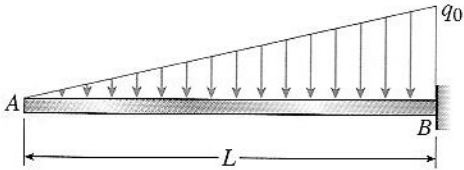


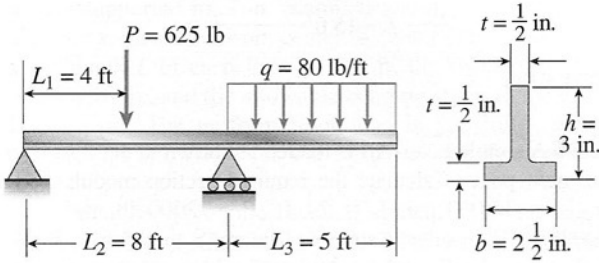
Quiz 6

1. Draw the shear-force and bending-moment diagrams for a cantilever beam AB supporting a linearly varying load of maximum intensity q_0 (see figure). and solve for the equations as a function of x for $V(x)$ and $M(x)$ using a cut free body method and also by integration where $w(x)$ is the slope shown in the figure below. Set the origin of $x=0$ at A .



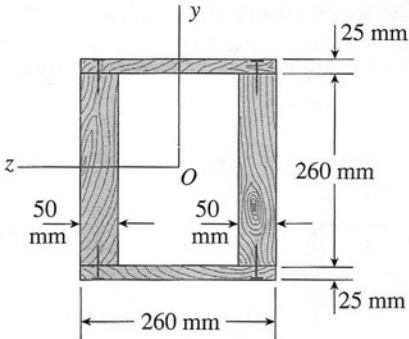
PROB. 1.

2. A beam of T-section is supported and loaded as shown in the figure. The cross section has width $b = 2\frac{1}{2}$ in., height $h = 3$ in., and thickness $t = \frac{1}{2}$ in. Determine the maximum tensile and compressive stresses in the beam.



PROB. 2.

3. A box beam of wood is constructed of two $260\text{ mm} \times 50\text{ mm}$ boards and two $260\text{ mm} \times 25\text{ mm}$ boards (see figure). The boards are nailed at a longitudinal spacing $s = 100\text{ mm}$. If each nail has an allowable shear force $F = 1200\text{ N}$, what is the maximum allowable shear force V_{\max} ?



PROB. 3