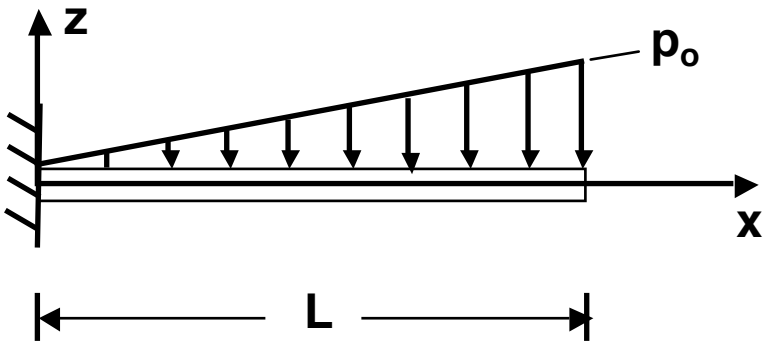
Unified Engineering Problem Set **Lectures: M10**
Week 5 Spring, 2008 **Units: M4.5**

M5.1 ***(10 points)*** A beam of length L is clamped at one end in its original configuration. The beam has a constant cross-section with area A and moment of inertia I, and is made of a material with modulus E and Poisson's ratio ν. The beam is loaded by a linearly-increasing downward load of intensity equal to zero at the clamped end and p_o at the other end. This original configuration is shown in the accompanying figure.



A second configuration of the beam has a roller support at the tip (x = L).

For each of the two configurations, determine the maximum deflection of the beam and its location. Compare the results for the two configurations.