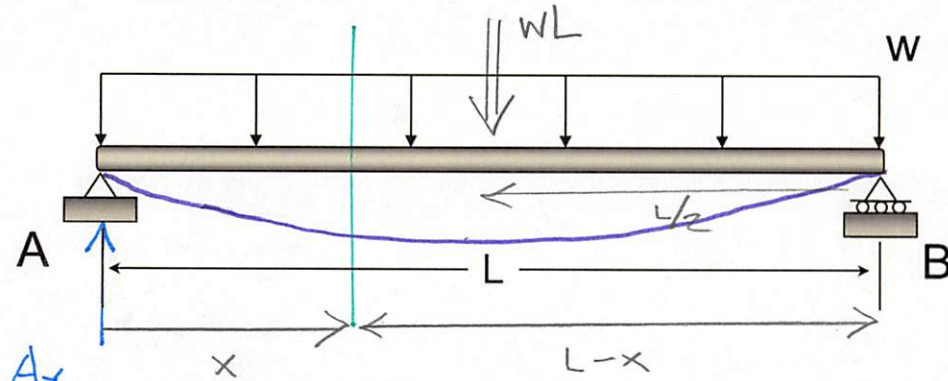
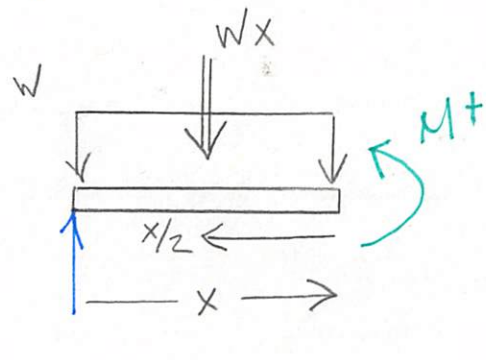


Example 7a-1: Determine the equations for slope and displacement in the following beam.



$$\sum M_B = 0 = wL\left(\frac{L}{2}\right) - A_y(L)$$

$$\underline{A_y = \frac{wL}{2}}$$



$$\sum M_{cut} = 0 = M + wx\left(\frac{x}{2}\right) - \frac{wL}{2}(x)$$

$$\underline{M(x) = \frac{w}{2}[-x^2 + Lx]}$$

$$M(x=0) = 0 \quad \checkmark$$

$$M(x=L) = 0 \quad \checkmark$$

$$EI\theta = \int M dx = \frac{w}{2} \left[-\frac{x^3}{3} + \frac{Lx^2}{2} \right] + C_1$$

$$\theta(x=0) = 0 = C_2$$

$$y = \int \theta dx = \frac{w}{2EI} \left[-\frac{x^4}{12} + \frac{Lx^3}{6} \right] + C_1x + C_2$$

$$y(x=L) = 0 = \frac{wL^4}{24EI} + C_1L$$

$$\underline{C_1 = -\frac{wL^3}{24EI}}$$