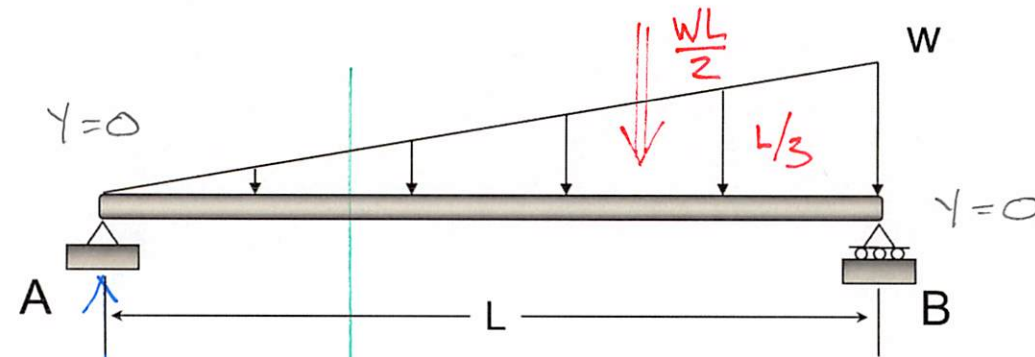
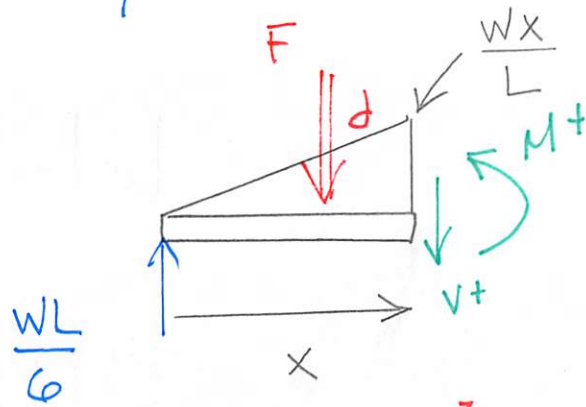


Example 7a-2: Determine the equations for slope and displacement in the following beam.



$$\sum M_B = 0 = \frac{WL}{2} \left(\frac{L}{3} \right) - A_y(L)$$

$$\underline{A_y = \frac{WL}{6}}$$



$$F = \frac{1}{2}(x) \frac{Wx}{L} = \frac{Wx^2}{2L}$$

$$d = \frac{1}{3}(x)$$

$$\sum M_{cut} = 0 = M + \frac{Wx^2}{2L} \left(\frac{x}{3} \right) - \frac{WL}{6}(x)$$

$$\underline{M = \frac{W}{6L} [-x^3 + xL^2]}$$

$$M(x=0) = 0$$

$$M(x=L) = 0$$

$$\Theta = \int \frac{M}{EI} dx = \frac{W}{6EIL} \left[-\frac{x^4}{4} + \frac{x^2L^2}{2} \right] + C_1$$

$$Y = \int \Theta dx = \frac{W}{6EIL} \left[-\frac{x^5}{20} + \frac{x^3L^2}{6} \right] + C_1x + C_2$$

$$\textcircled{1} \quad Y(x=0) = 0 = \underline{\underline{C_2}}$$

$$\textcircled{2} \quad Y(x=L) = 0 = \frac{W}{6EIL} \left[\frac{7L^5}{60} \right] + C_1L \quad \underline{\underline{C_1 = \frac{-7WL^3}{360EI}}}$$