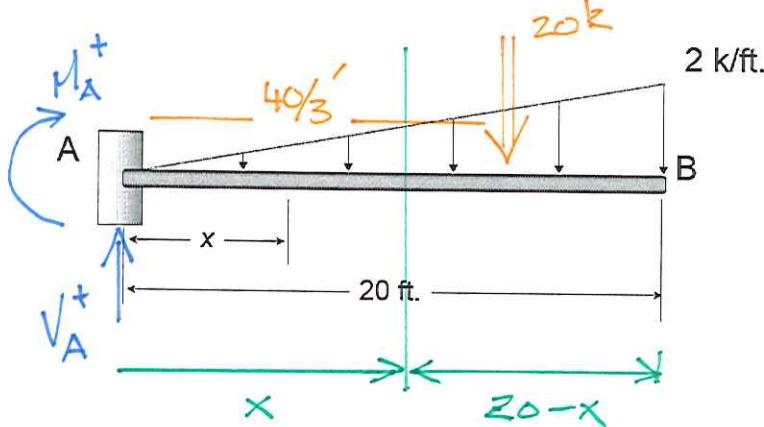
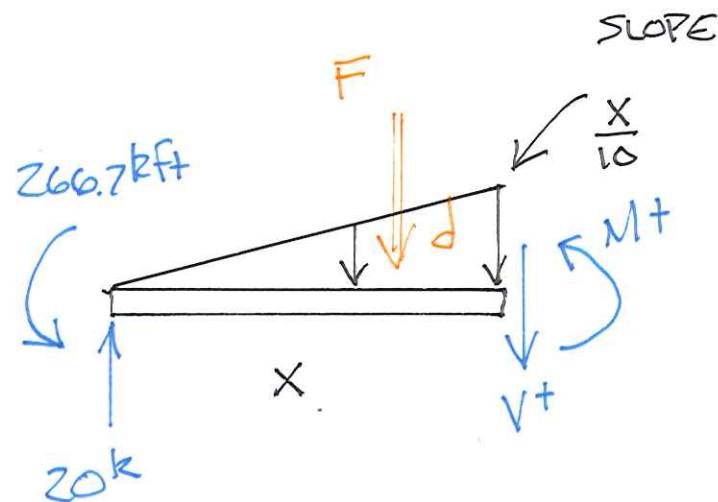


Example 4b-1 - Determine the internal shear and bending moment as a function of x .



$$\begin{aligned} \text{Clockwise moment at A: } & \sum M_A = 0 = -M_A - 20k(40/3) \\ & M_A = -266.7 \text{ kft} \\ \text{Vertical force at A: } & \sum F_y = 0 = V_A - 20k \\ & V_A = 20k \end{aligned}$$



$$\frac{2k/\text{ft}}{20'} = \frac{1}{10}$$

$$F = \frac{1}{2}(x) \frac{x}{10} = \frac{x^2}{20}$$

$$d = \frac{x}{3}$$

$$\begin{aligned} \text{Clockwise moment at cut: } & \sum M_{\text{CUT}} = 0 = M + \frac{x^2}{20} \left(\frac{x}{3}\right) - 20k(x) + 266.7 \text{ kft} \\ M(x) = & \left[-\frac{x^3}{60} + 20x - 266.7 \right] \text{ kft} \end{aligned}$$

$$\sum F_y = 0 = -V - \frac{x^2}{20} + 20k$$

$$V(x) = \left[-\frac{x^2}{20} + 20 \right] k$$

$$\frac{\partial M}{\partial x} = V$$