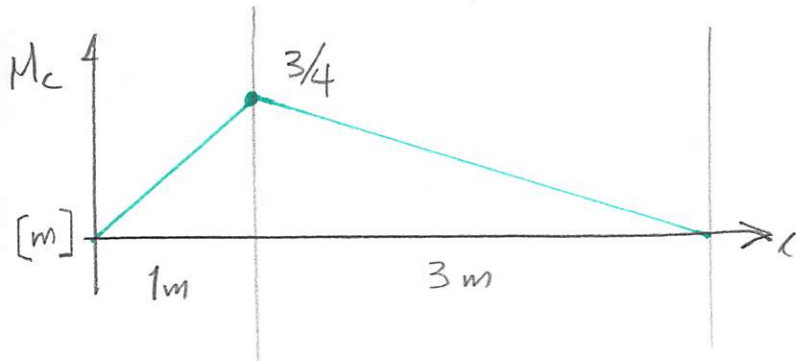
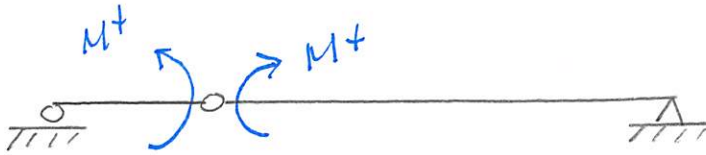
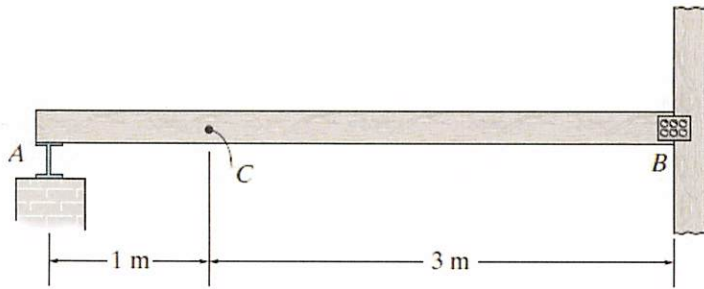
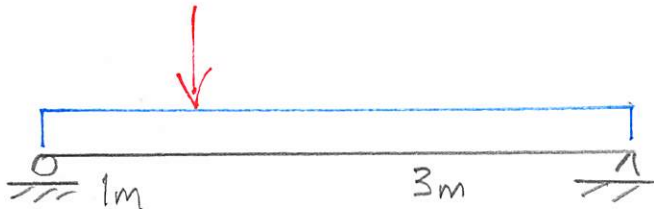


Example 6b-1: The beam supports a uniform dead load of 500 N/m and a single live concentrated force of 3 kN. Determine (a) the maximum positive moment at C and (b) the maximum positive shear at C.



$$\underline{\underline{M_{MAX} = 3 \text{ kNm}}}$$



$$\begin{aligned} \sum M_B = 0 \\ = 1(3\text{m}) - A_1(4\text{m}) \\ A_1 = 3/4 \end{aligned}$$

$$\begin{aligned} \sum M_{cut} = 0 \\ = M_c - A_1(1\text{m}) \\ M_c = A_1 = 3/4 \text{ m} \end{aligned}$$

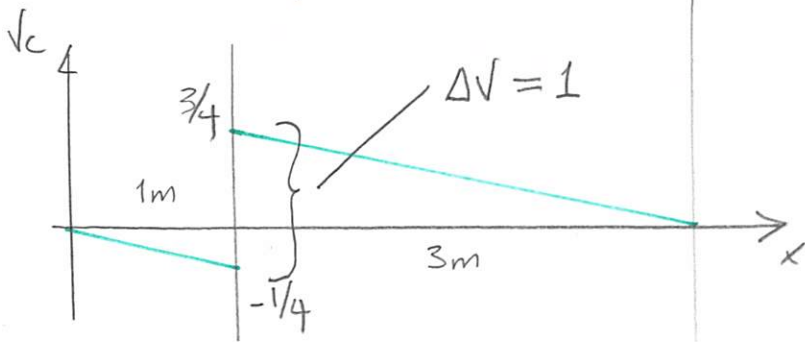
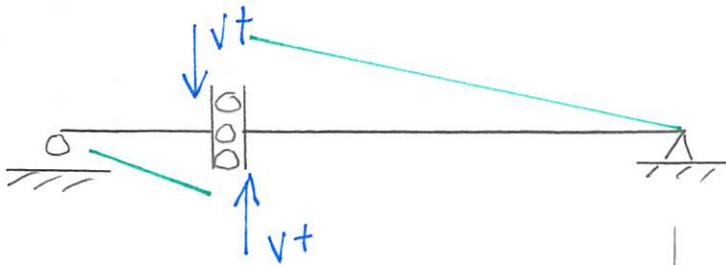
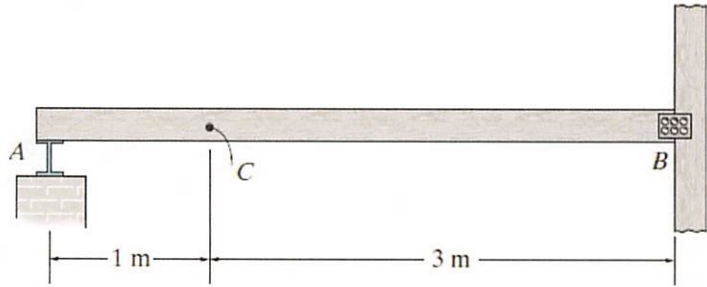
CONCENTRATED LOAD

$$3 \text{ kN} \left(\frac{3}{4} \text{ m} \right) = \frac{9}{4} \text{ kNm} = \underline{\underline{2.25 \text{ kNm}}}$$

UNIFORM LOAD

$$\left[\frac{1}{2} (4\text{m}) \left(\frac{3}{4} \text{ m} \right) \right] \frac{1}{2} \text{ kN/m} = \underline{\underline{0.75 \text{ kNm}}}$$

Example 6b-1: The beam supports a uniform dead load of 500 N/m and a single live concentrated force of 3 kN. Determine (a) the maximum positive moment at C and (b) the maximum positive shear at C.



CONCENTRATED LIVE LOAD

$$V_C^+ = \frac{3}{4}(3 \text{ kN}) = \underline{2.25 \text{ kN}}$$

$$V_C^- = -\frac{1}{4}(3 \text{ kN}) = -0.75 \text{ kN}$$

UNIFORM DEADLOAD

$$V_C = \frac{1}{2} \text{ kN/m} \left(\frac{1}{2} \right) \left[1 \text{ m} \left(-\frac{1}{4} \right) + 3 \text{ m} \left(\frac{3}{4} \right) \right]$$

$$= \underline{0.5 \text{ kN}}$$

$$\underline{V_C^+ = 2.75 \text{ kN}} \quad \text{CONTROLS}$$

$$\underline{V_C^- = -0.25 \text{ kN}}$$