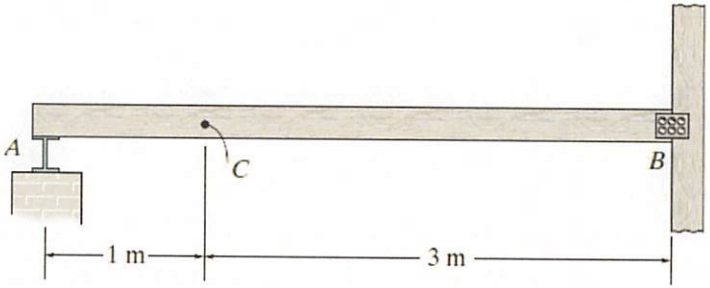
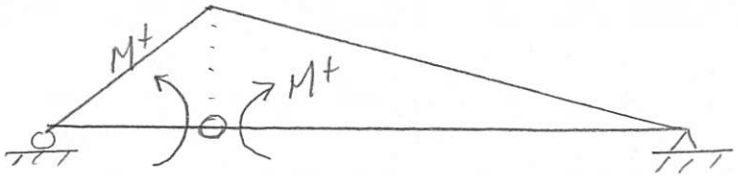
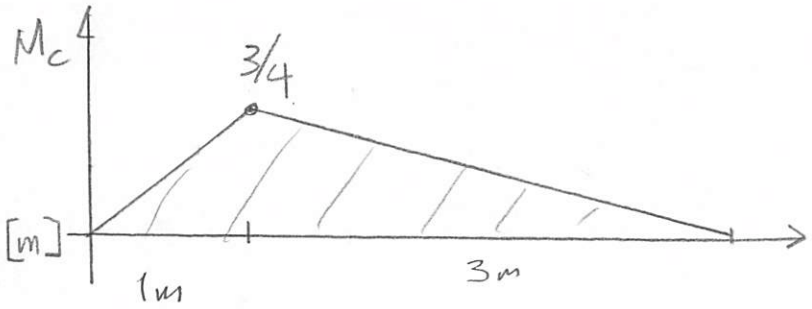
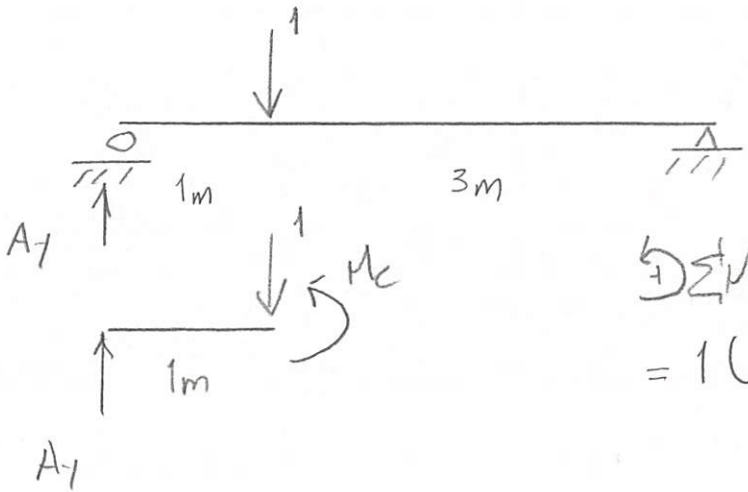
Example 6b-1: The beam supports a uniform dead load of 500 N/m and a single live concentrated force of 3 kN. Determine (a) the maximum positive moment at *C* and (b) the maximum positive shear at C.









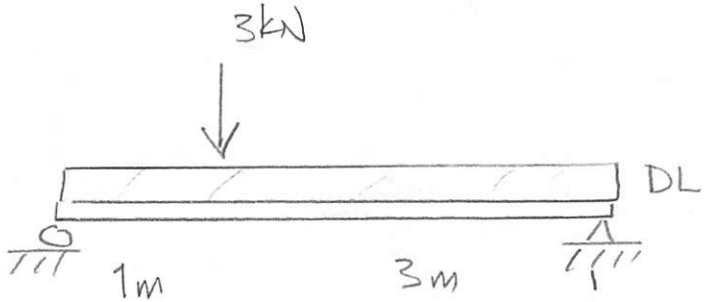
$\curvearrowleft + \sum M_B = 0$

$= 1(3m) - A_y(4m)$

$A_y = 3/4$

$\curvearrowleft + \sum M_{cut} = 0 = M_c - A_y(1m)$

$M_c = A_y(1m) = 3/4\,m$



CONCENTRATED $3kN(3/4m) = \underline{9/4\ kNm}$

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

$$\underline{\underline{M_c = 3kNm}}$$

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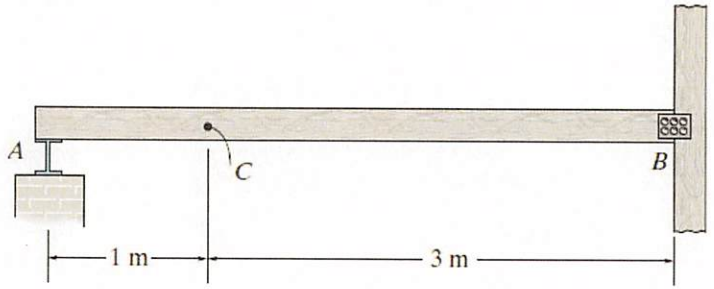

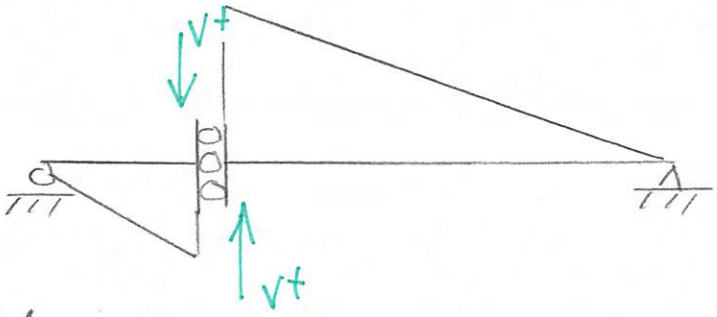

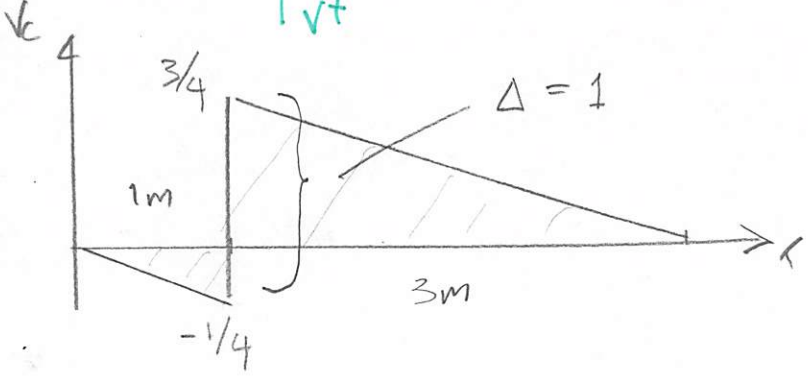

CONCENTRATED FORCE

$$3\text{kN}(3/4) = \underline{9/4\text{ kN}}$$

DEAD LOAD

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

$$V_c = 11/4\text{ kN} = \underline{2.75\text{ kN}}$$