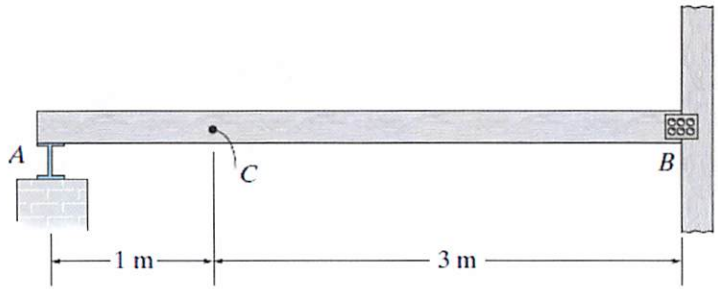
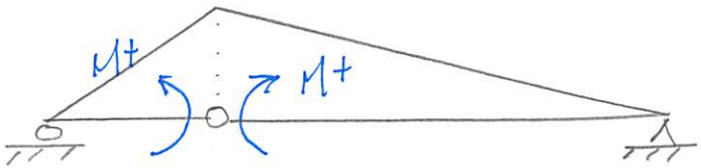
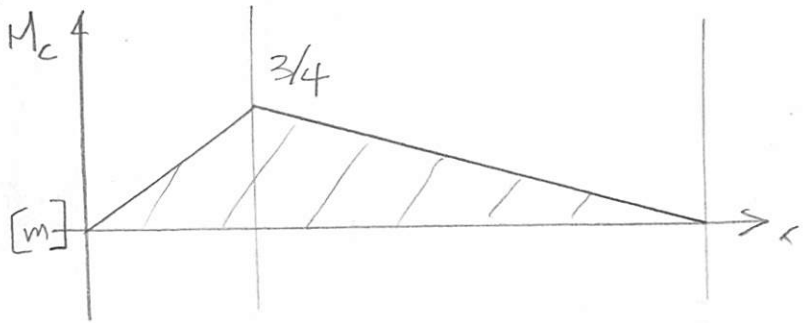
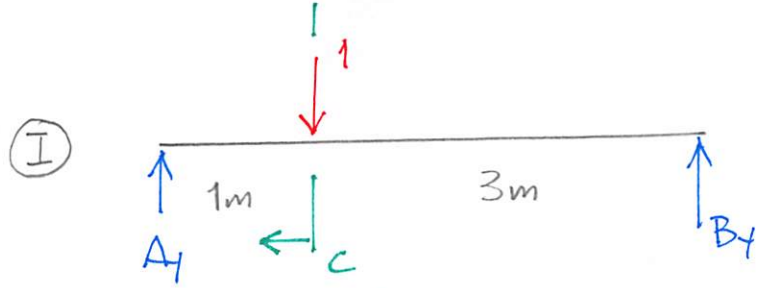
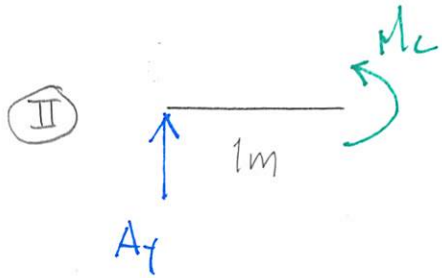
Example 6b-1: The beam supports a uniform dead load of 500 N/m and a single live concentrated force of 3 kN. Determine (a) the maximum positive moment at *C* and (b) the maximum positive shear at C.











(I) $+\circlearrowleft \sum M_B = 0 = 1\,(3m) - A_y(4m)$ $\quad A_y = 3/4$

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

$M_c = 3/4\,m$

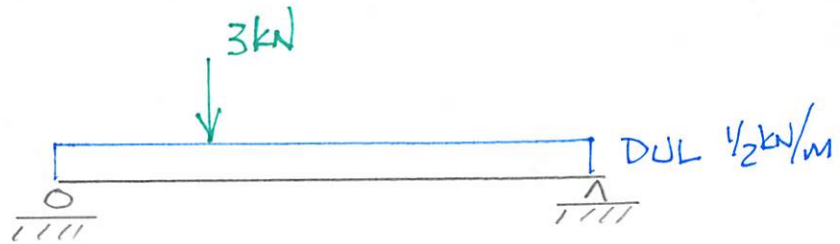
DEAD UNIFORM LOAD

$(1/2\,kN/m)\underbrace{(\tfrac{1}{2})(4m)(3/4m)}_{\text{AREA}} = 3/4\,kN\,m$ *

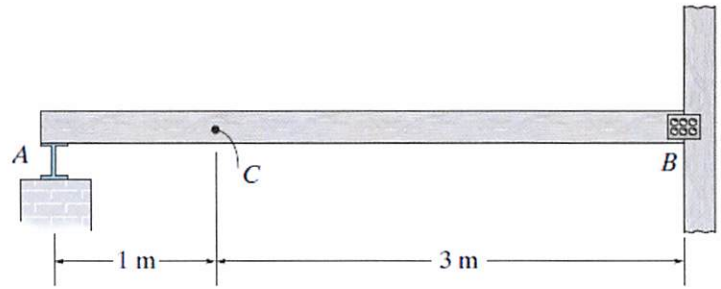
LIVE FORCE

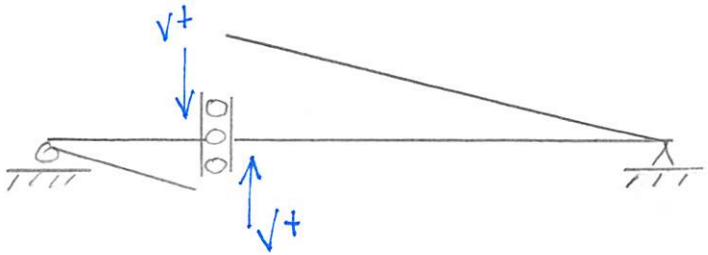
$3kN(3/4m) = 9/4\,kN\,m$ *

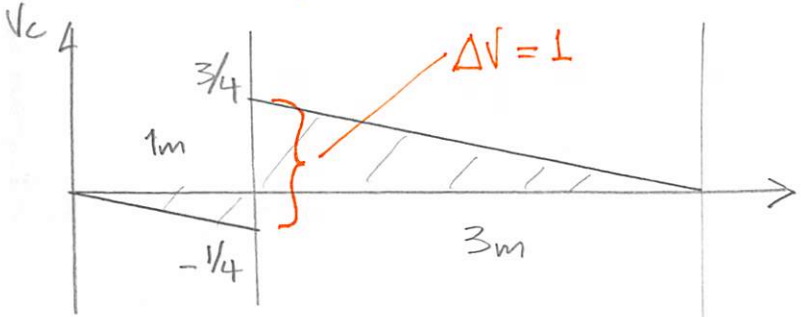
$M_c = 3kN\,m$



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.







$$\frac{1m}{1m+3m} = \frac{1}{4} \qquad \frac{3m}{1m+3m} = \frac{3}{4}$$

DEAD UNIFORM LOAD

$$\underbrace{\left(\tfrac{1}{2}\,kN/m\right)\left(\tfrac{1}{2}\right)\left[1m\left(-\tfrac{1}{4}\right) + 3m\left(\tfrac{3}{4}\right)\right]}_{\text{AREA}} = 0.5\,kN\ *$$

LINE FORCE

$$3\,kN\left(\tfrac{3}{4}\right) = \tfrac{9}{4}\,kN$$

$$V_c = 2.75\,kN$$

