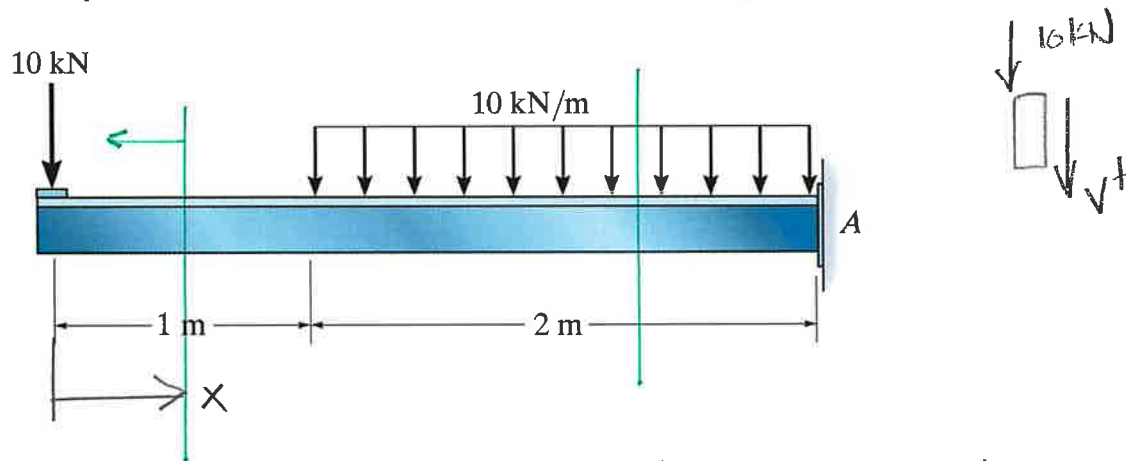
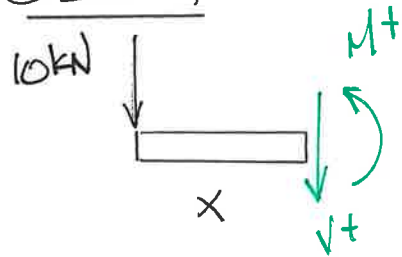


**Example 4b-3** - Determine the internal shear and bending moment as a function of  $x$ .



$0 \leq x \leq 1$



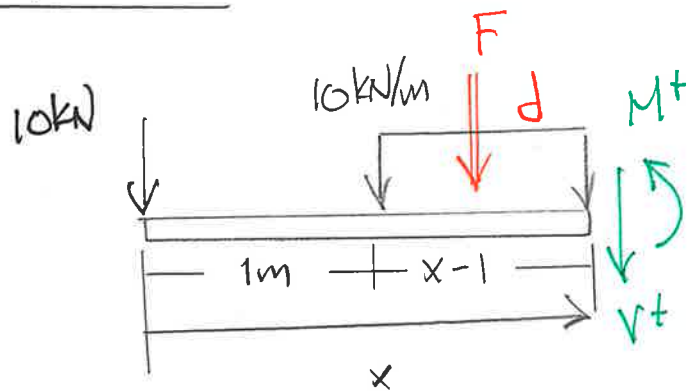
$$\begin{aligned} \sum M_{cut} = 0 &= M + 10 \text{ kN} x \\ \sum F_y = 0 &= -V - 10 \text{ kN} \end{aligned}$$

$M_1 = [-10x] \text{ kNm}$

$M(x=0) = 0$  ✓

$V_1 = -10 \text{ kN}$

$1 \leq x \leq 3$



$d = \frac{x-1}{2}$        $F = 10(x-1)$

$$\sum M_{cut} = 0 = M_{II} + 10(x-1) \frac{x-1}{2} + 10x$$

$M_{II} = [-5(x-1)^2 - 10x] \text{ kNm}$

$M_1(x=1) = M_{II}(x=1)$  ✓

$$\sum F_y = 0 = -V - F - 10 \text{ kN}$$

$V = [-10(x-1) - 10] \text{ kN}$

$\frac{dM}{dx} = V$  ✓