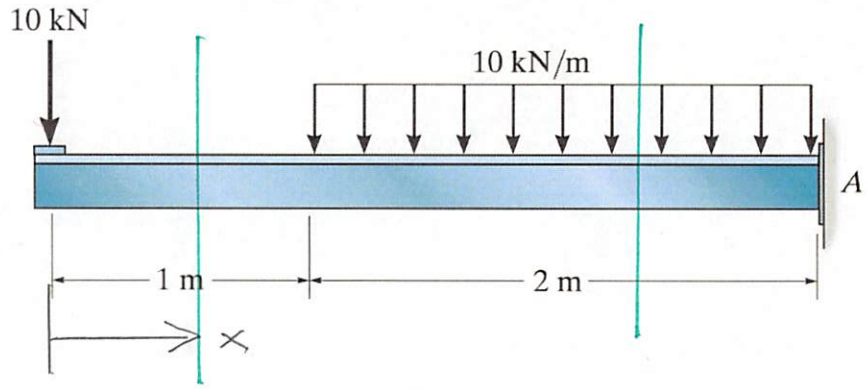
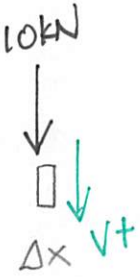
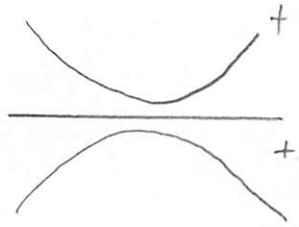
Example 4b-3 - Determine the internal shear and bending moment as a function of ***x***.



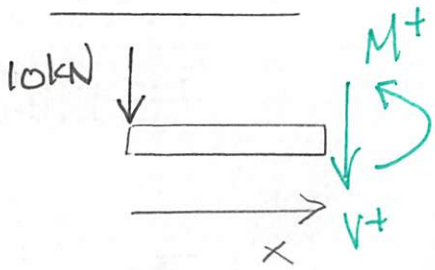


$\Rightarrow V = -10\,kN$



$M(x=0) = 0$ ✓

$0 \le x \le 1$



$\circlearrowleft + \sum M_{cut} = 0 = M + 10kN(x)$

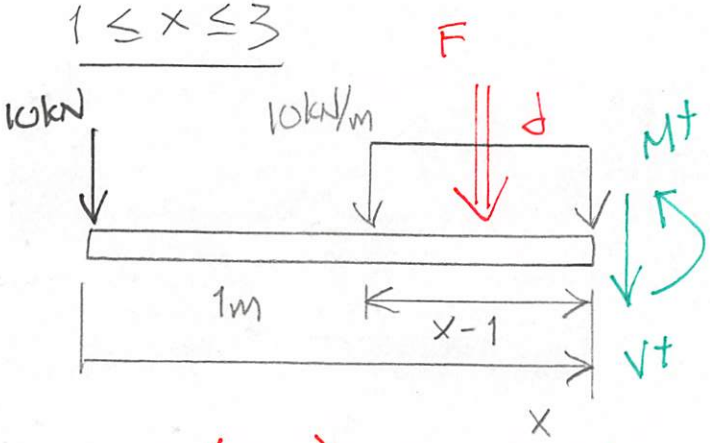
$+\uparrow \sum F_y = 0 = -V - 10kN$

$M_I = [-10x]\,kN_m$

$V_I = -10kN$

$\frac{dM}{dx} = V$ ✓

$1 \le x \le 3$



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

$\circlearrowleft + \sum M_{cut} = 0 = M_{II} + 10(x-1)\left(\frac{x-1}{2}\right) + 10x$ (F, d)

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

$M_I(x=1) = M_{II}(x=1)$ ✓

$+\uparrow \sum F_y = 0 = -V - 10(x-1) - 10kN$

$V_{II} = [-10(x-1) - 10]\,kN$

$V_I(x=1) = V_{II}(x=1)$ ✓