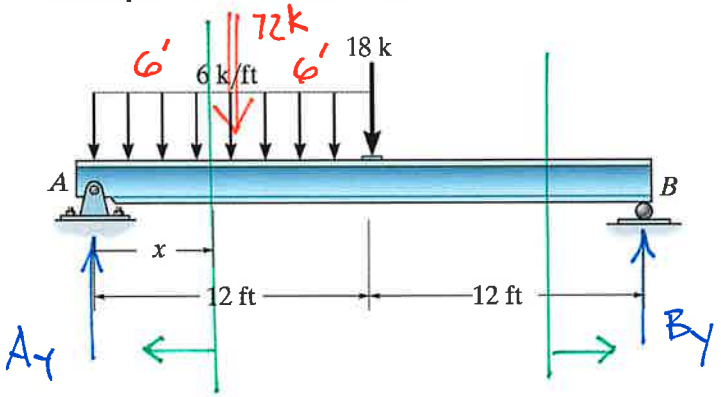
Example 4b-6 - Determine the internal shear and bending moment as a function of ***x***.

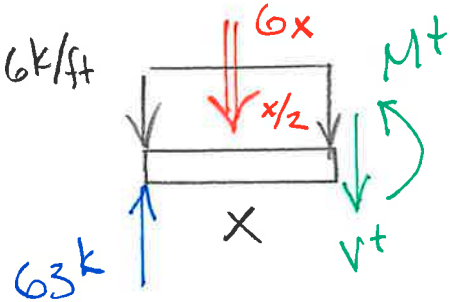


$\circlearrowleft +\sum M_B = 0 = 18^k(12') + 72^k(18') - A_y(24')$ $\quad A_y = 63K$

$+\uparrow \sum F_y = 0 = A_y + B_y - 72^k - 18^k$ $\quad B_y = 27^k$

$M(x=0) = 0$ ✓

$0 \le x \le 12$



$\circlearrowleft +\sum M_{CUT} = 0 = M + 6x\left(\frac{x}{2}\right) - 63x$

$+\uparrow \sum F_y = 0 = -V - 6x + 63k$

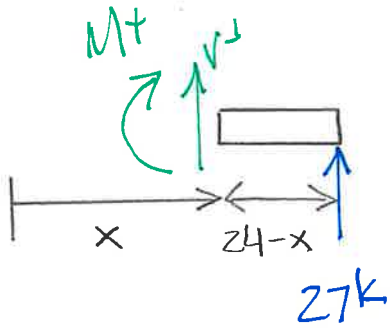
$M_I(x) = \left[-3x^2 + 63x\right] kft$

$V_I(x) = \left[-6x + 63\right] k$

$V(x=0) = 63k$ ✓

$M(x=24) = 0$ ✓

$12 \le x \le 24$



$\circlearrowleft +\sum M_{CUT} = 0 = -M + 27(24-x)$

$+\uparrow \sum F_y = 0 = V + 27k$

$M_{II}(x) = 27(24-x)\ kft$

$M_I(x=12) = M_{II}(x=12)$ ✓

$V_{II}(x) = -27^k$

$V_{II}(x=24) = -27^k$ ✓

$V_I(x=12) = -9$

$V_{II}(x=12) = -27$

$\Delta V = -18$ ✓