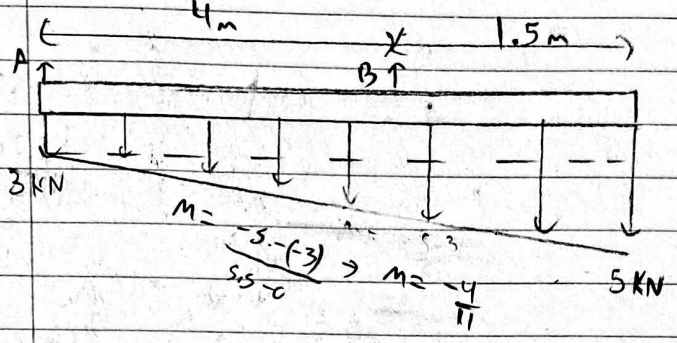
Solutions: 21-5-7.3-MK-07



final resultant force:

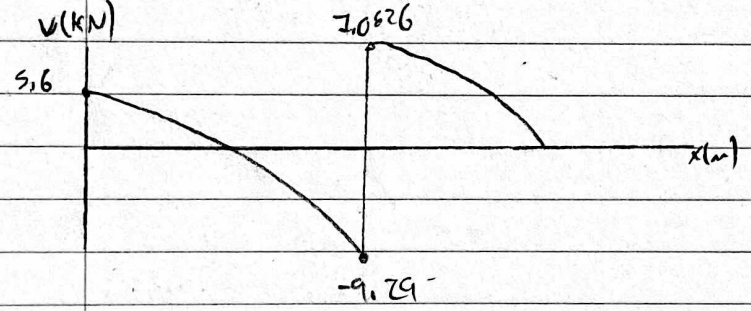
$F_R = -(3kN)(5.5m) - \frac{1}{2}(2kN)(5.5m) = -22\,kN$

$d = \frac{(3kN)(5.5m)(\frac{5.75m}{2}) + (2kN)(\frac{1}{2})(5.5m)(\frac{2}{3})(5.5m)}{22kN}$

$d = 2.979\,m$ from A

$\Sigma M_A = -(2.979m)(22kN) + B_y(4m) \rightarrow B_y = 16.38\,kN$

$\Sigma M_B = -A_y(4) + 22kN(4 - 2.979m) \rightarrow A_y = 5.615\,kN$



Shear force

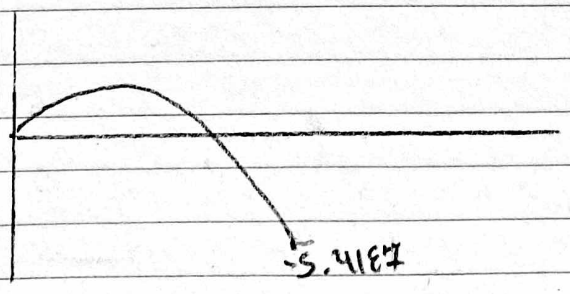
$V_A = 5.615\,kN$

$V_{6\leftarrow} = 5.615 + \int -3kN - \frac{4}{11}x$

$V_{6\leftarrow} 5.615 - 3x - \frac{4}{22}x^2$

$V_{6\leftarrow} = 5.615 - 2(4) - \frac{4}{22}(4^2) \rightarrow \boxed{V_{6\leftarrow} = -9.29379}$

$V_{6\rightarrow} = -9.29379 + 16.38\,kN = 7.0862\,kN \rightarrow$ lower



Bending

$M_A = 0$

$M_B = M_A + \int 5.615 - 3x - \frac{4}{22}x^2$

$M_B = 5.615x - \frac{3x^2}{2} - \frac{4x^3}{66}$

$M_B = 5.615(4) - \frac{3(4)^2}{2} - \frac{4(4)^3}{66} = \boxed{-5.4187\,kN\cdot m}$