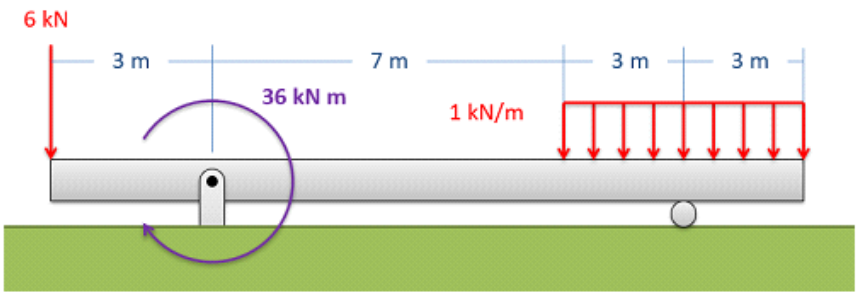
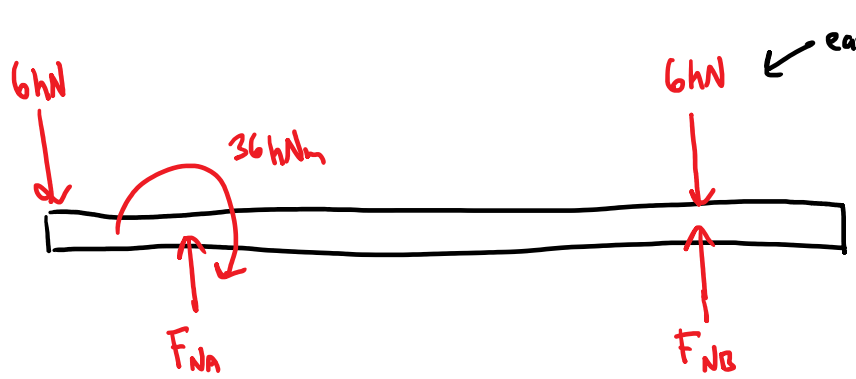
Problem 1

Draw the shear and moment diagrams for the beam shown below.



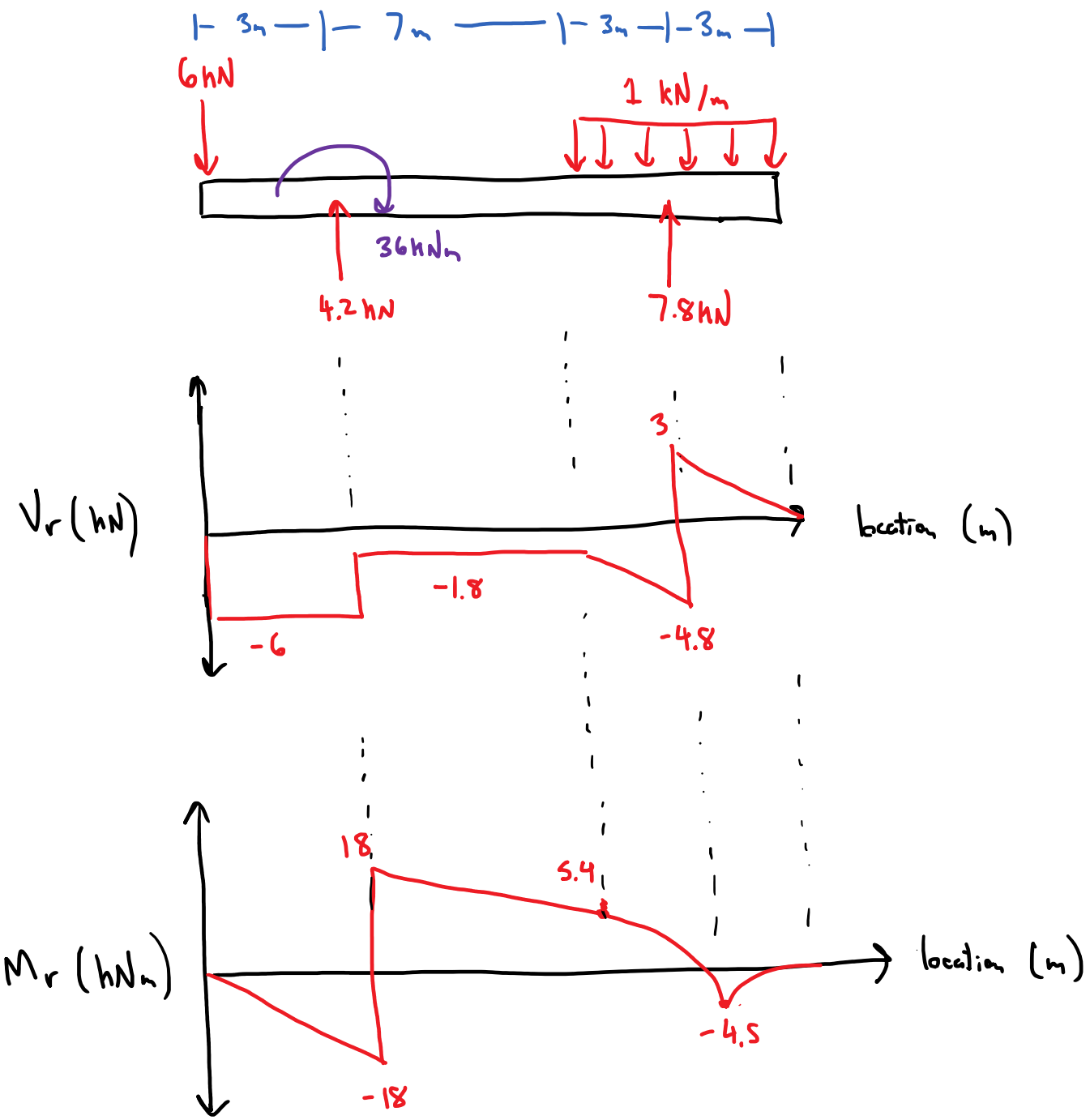


$$\Sigma F_y = -6 + F_{NA} + F_{NB} - 6 = 0$$

$$\Sigma M_A = (6)(3) - 36 - (6)(10) + F_{NB}(10) = 0$$

$$F_{NB} = \frac{-(6)(3) + 36 + (6)(10)}{10} = 7.8 \text{ kN}$$

$$F_{NA} = 12 - 7.8 = 4.2 \text{ kN}$$


3m
7m
3m
3m
6kN
1 kN/m
36kNm
4.2kN
7.8kN
V_r (kN)
location (m)
3
-1.8
-6
-4.8
M_r (kNm)
location (m)
18
5.4
-4.5
-18