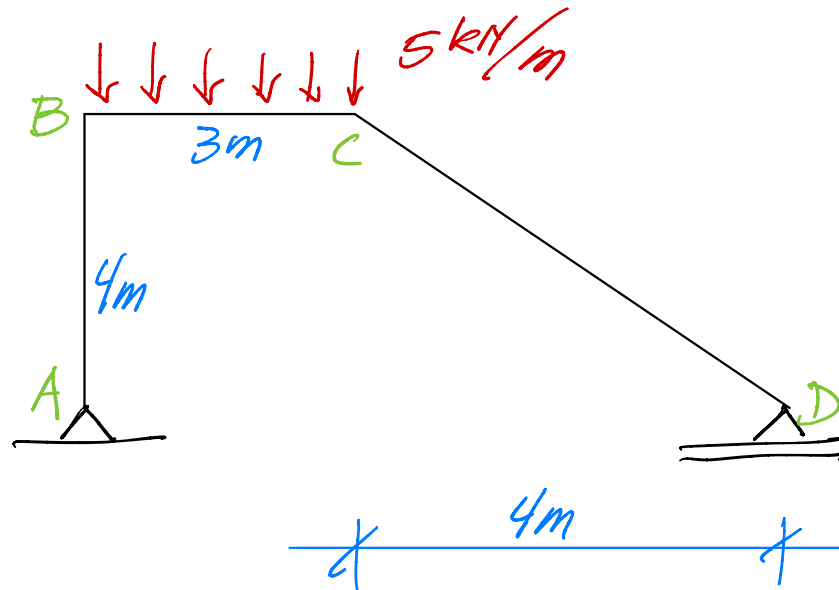


Example: Determinate frame

Objective: Practice drawing BMD → SFD → AFD, this time with an inclined member.



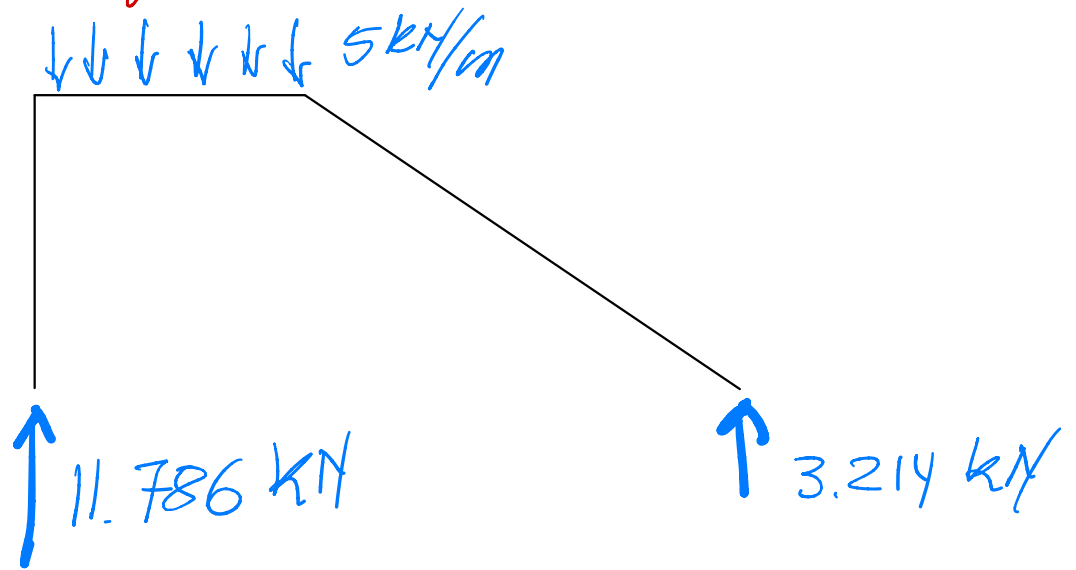
1. Reactions:

$$\sum M_A = (5 \text{ kN/m})(3\text{m})\left(\frac{3\text{m}}{2}\right) - R_{Dy}(7\text{m}) = 0$$
$$\Rightarrow R_{Dy} = 3.214 \text{ kN}$$

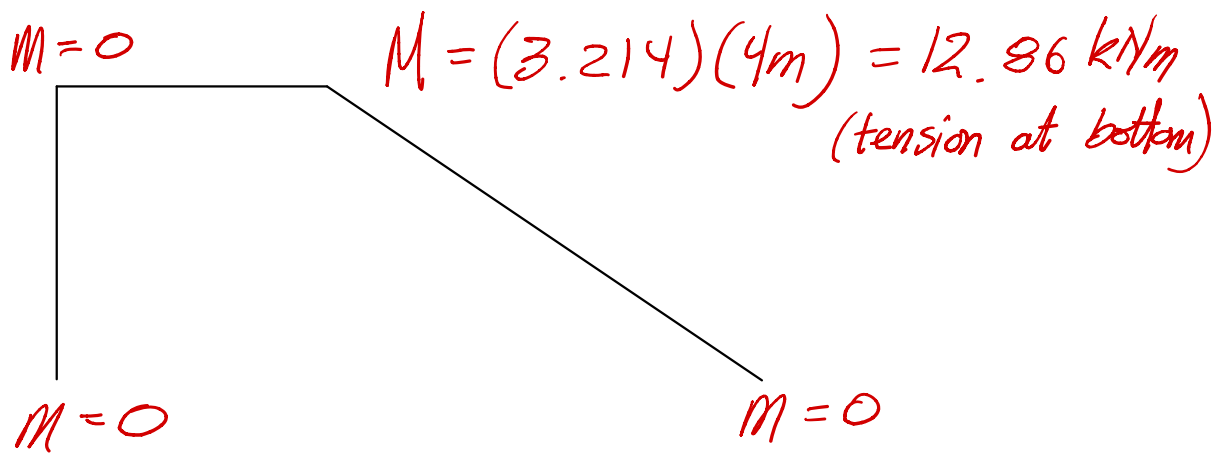
$$\sum F_y = (5 \text{ kN/m})(3\text{m}) - 3.214 - R_{Ay} = 0$$
$$\Rightarrow R_{Ay} = 11.786 \text{ kN}$$

$$\sum F_x = R_{Ax} = 0$$

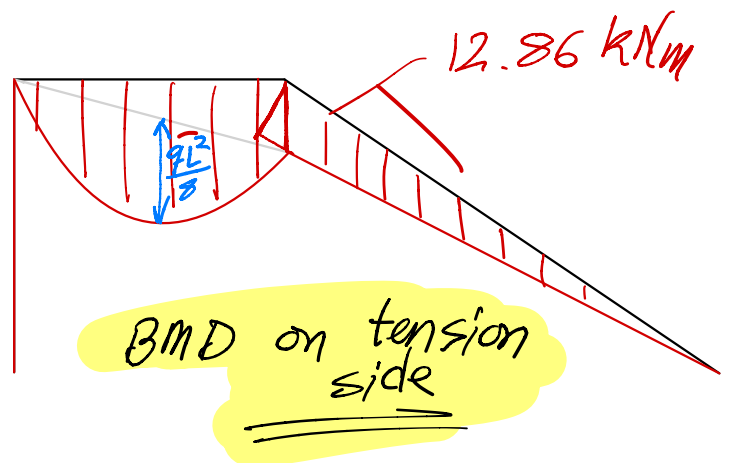
Summary of reactions:



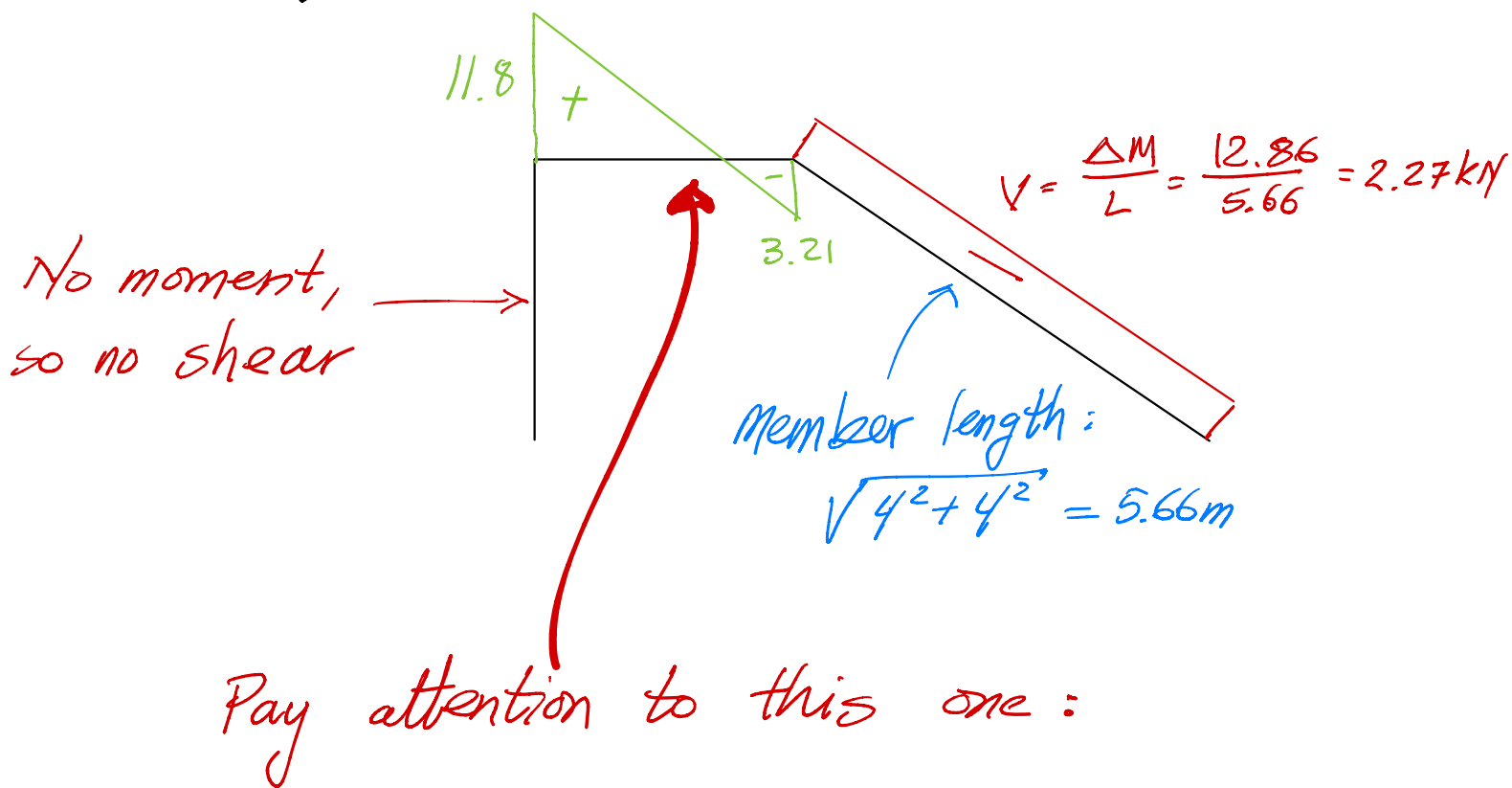
2. Moment at select locations:



Then draw BMD between those values:

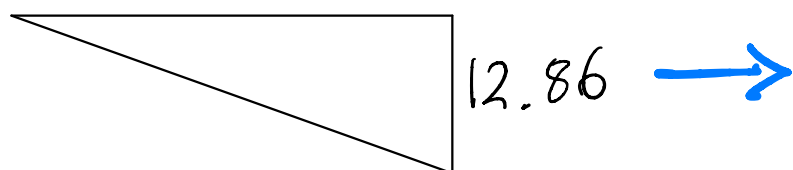


3. SFD from BMD:



BMD:

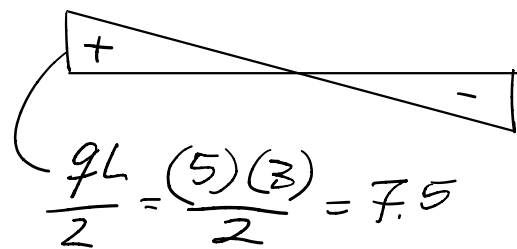
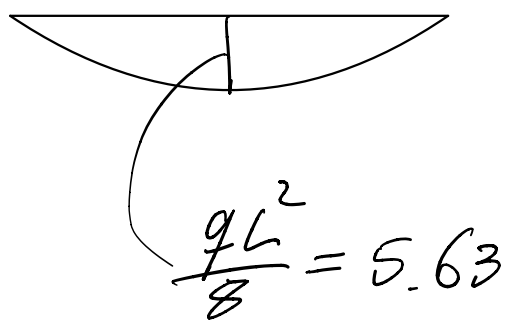
SFD:



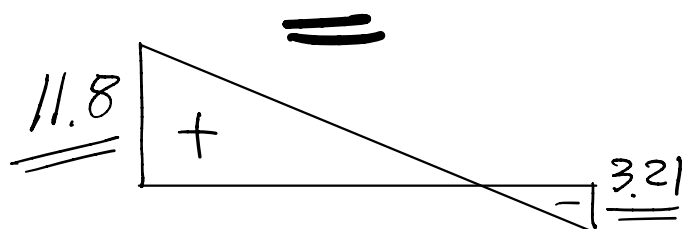
$$\boxed{+\frac{12.86}{3} = 4.29}$$

+

+

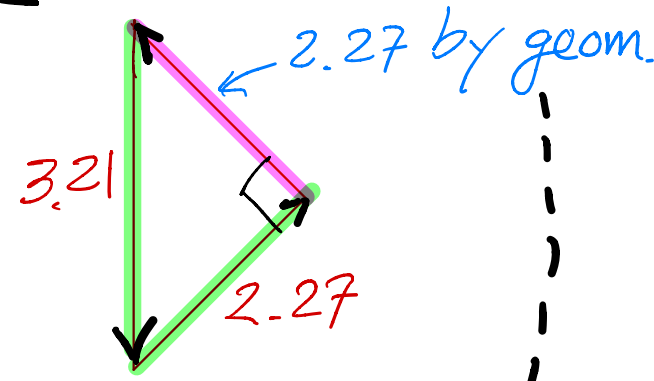
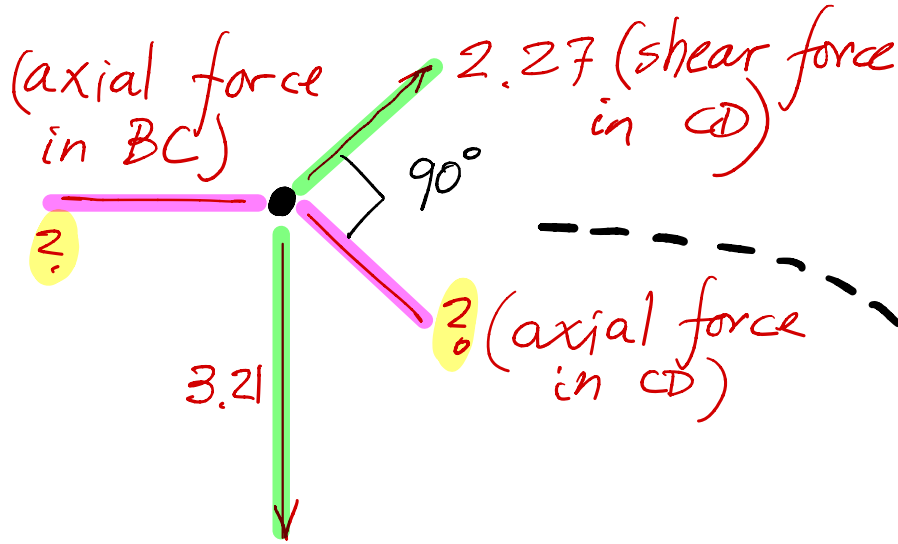
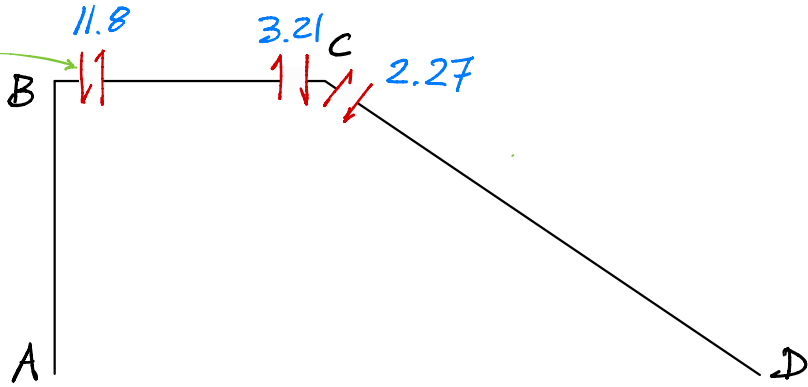


Total SFD:

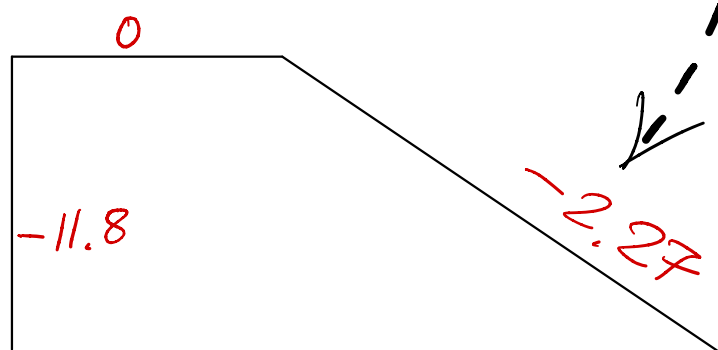


4. AFD from SFD:

Implies 11.8 kN compression in the column



Summary of axial forces:



Notice: No horiz. reaction