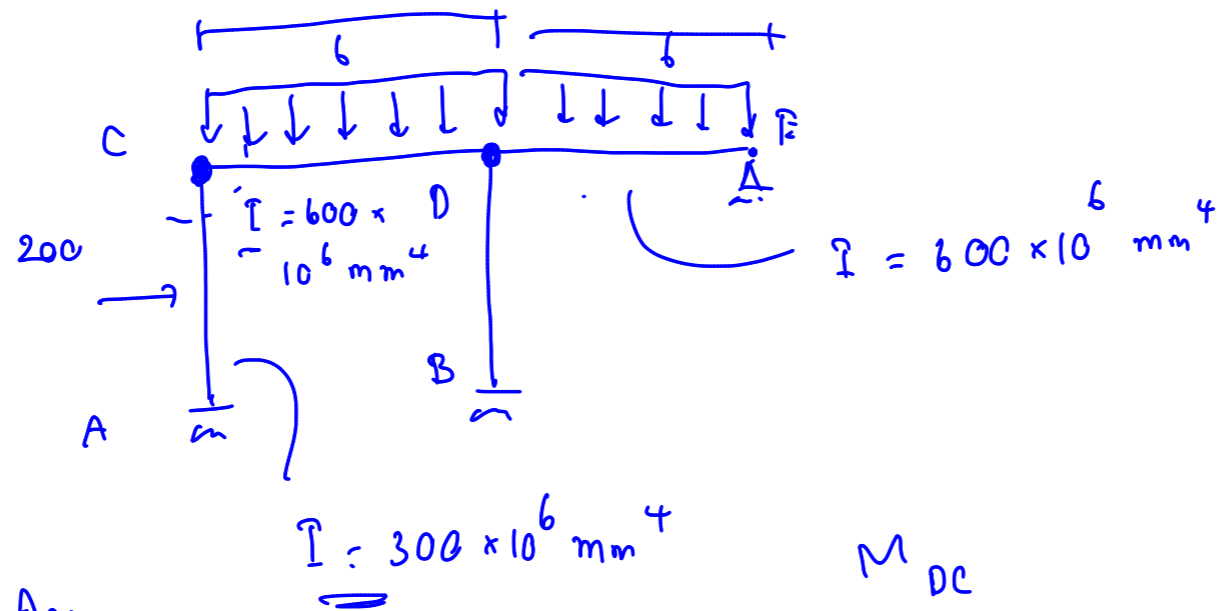


15.8

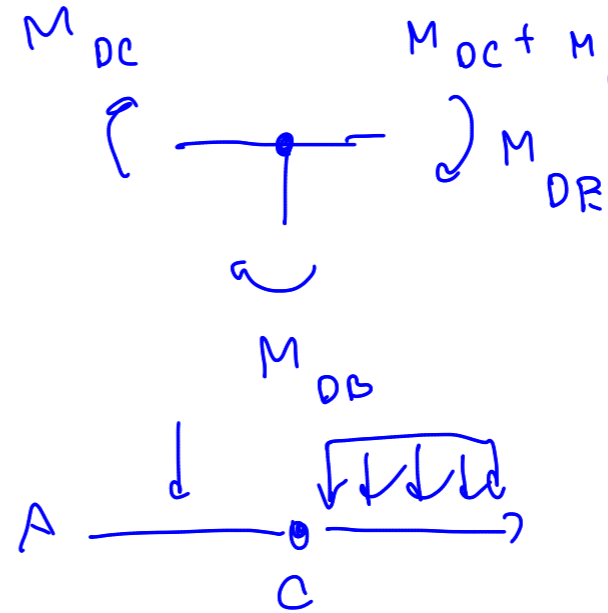
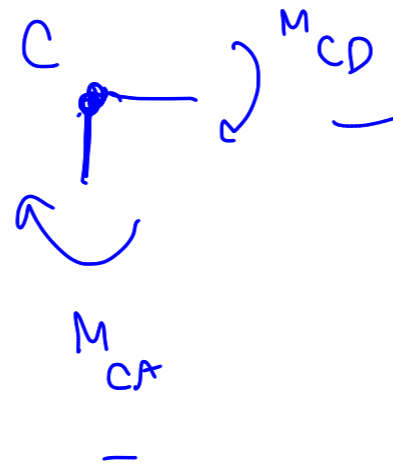
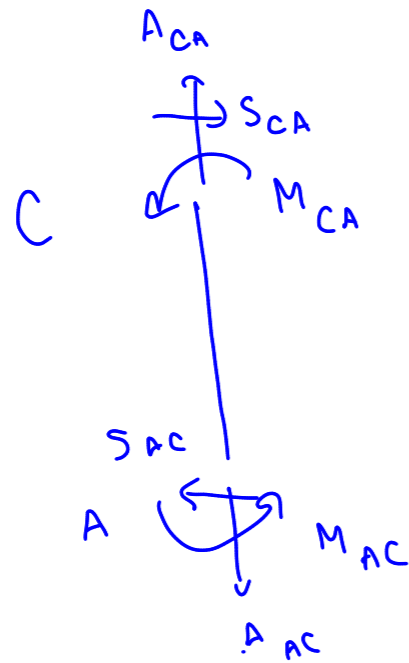


θ_D, θ_C

$\sum M_C = 0$
 $M_{CD} + M_{CA} = 0$

$\sum M_D = 0$

$M_{DC} + M_{DB} + M_{DR} = 0$

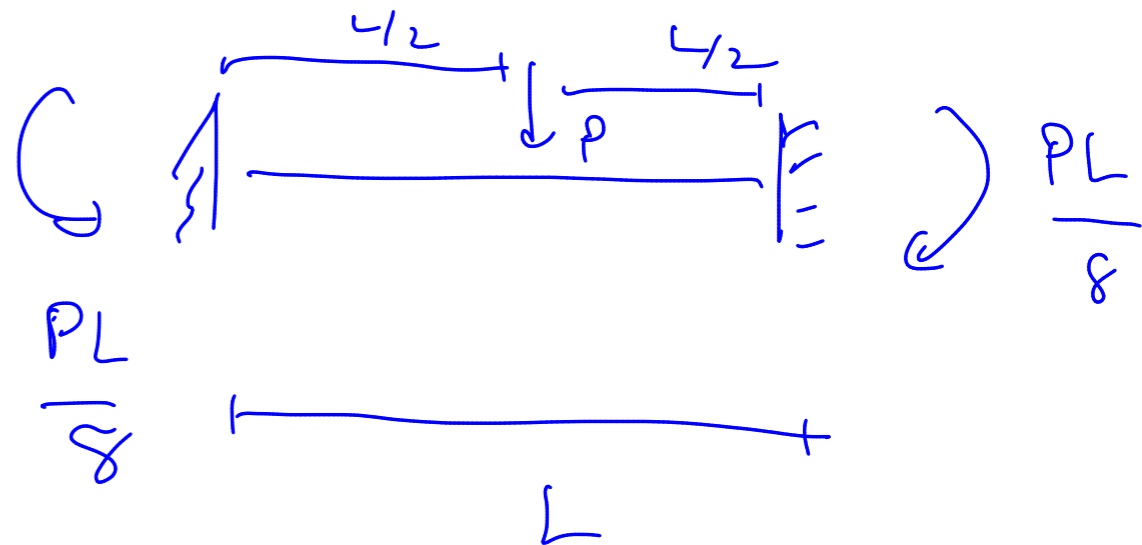


$$FEM_{AC} = -FEM_{CA}$$

$$= \frac{200 \times 4}{8} = 100 \text{ kN}\cdot\text{m}$$

$$FEM_{DB} = FEM_{BD} = 0$$

$$FEM_{CD} = -FEM_{DC} = FEM_{DB} = 150 \text{ kN}\cdot\text{m}$$



$$= FEM_{ED} = \frac{6UL^2}{12} = \frac{50 \times 6^2}{12}$$

$$\begin{aligned}
 M_{AC} &= \frac{2EI}{L} (2\theta_A + \theta_C - 3\psi) + FEM_{AC} \\
 &= \frac{2EI}{4} (2(0) + \theta - 3(0)) + 100 \\
 &= 0.5EI\theta_C + 100
 \end{aligned}$$

$$M_{CA} = \frac{2EI}{4} (2\theta_C + 0 - 3(0)) - 100 = EI\theta_C - 100$$

$$M_{BD} = \frac{2EI}{4} (2(0) + \theta_D - 3(0)) - 0 = 0.5EI\theta_D$$

$$M_{DB} = \frac{2EI}{4} (2\theta_D + 0 - 3(0)) - 0 = EI\theta_D$$

$$\begin{aligned}
 M_{CD} &= \frac{2E(2I)}{6} (2\theta_C + \theta_D - 3(0)) + 150 \\
 &= 1.33EI\theta_C + 0.67EI\theta_D + 150
 \end{aligned}$$

$$M_{DC} = \frac{2EI(2I)}{6} (2\theta_D + \theta_C - 3(0)) - 150$$

$$= 0.67EI\theta_C + 1.33EI\theta_D - 150$$

$$M_{DE} = \frac{3E(2I)}{6} \theta_D + \left(150 + \frac{150}{2}\right)$$

$$= EI\theta_D + 225$$

$$M_{ED} = 0$$

$$\sum M_C = 0 \quad M_{CA} + M_{CD} = 0$$

$$2.33EI\theta_C + 0.67EI\theta_D = -50 \quad \text{--- (1)}$$

$$\sum M_D = 0 \quad M_{DB} + M_{DC} + M_{DE} = 0$$

$$0.67EI\theta_C + 3.33EI\theta_D = -75 \quad \text{--- (2)}$$

$$EI\theta_c = -15.9 \text{ kN}\cdot\text{m}^2$$

$$EI\theta_D = -19.32 \text{ kN}\cdot\text{m}^2$$