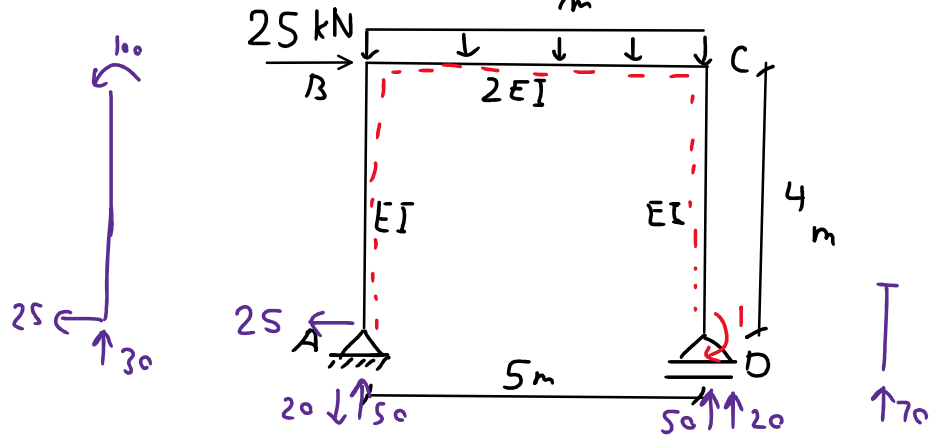


مثال: تغییر مکان امتن رجزش نقطه D را محاسبه کنید.

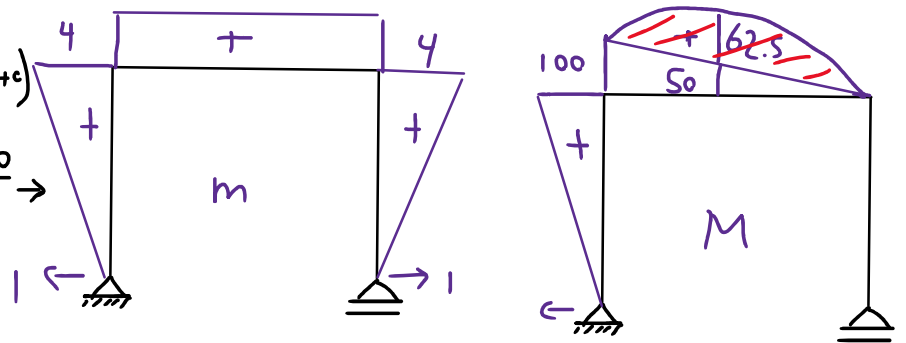
$$1 \times \delta_D = \int \frac{mM}{EI} dx$$



$$1 \times \delta_D = \frac{1}{EI} \left(\frac{4}{3}\right) (4) (1000) +$$

$$\frac{1}{2EI} \left(\frac{5}{6}\right) \left[(4)(1000) + 4(4)(112.5) + 0 \right] + 0 = \frac{1}{EI} (537.3 + 916.7) = \frac{1450}{EI} \rightarrow$$

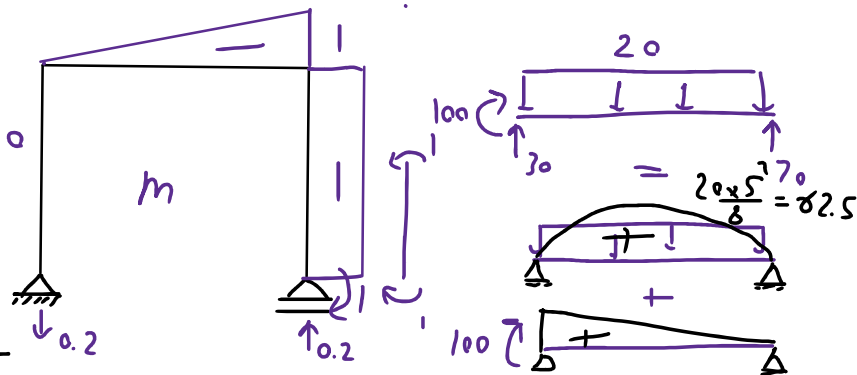
$$\delta_D = \frac{1450}{EI} \rightarrow$$



$$1 \times \theta_D = \int \frac{mM}{EI} dx$$

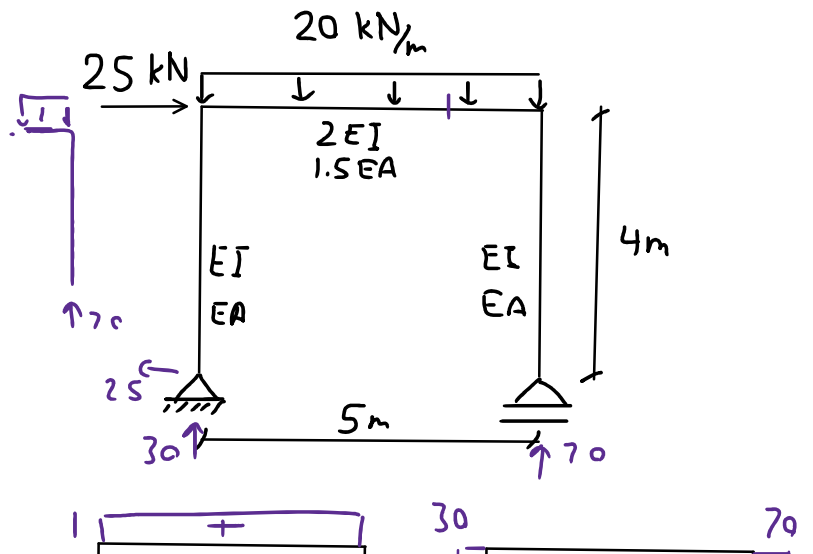
$$1 \times \theta_D = 0 + \frac{1}{2EI} \left[0 + 4(-0.5)(112.5) + 0 \right] + 0$$

$$\theta_D = \frac{-93.75}{EI} \curvearrowright$$



مثال: مثال فوق را با در نظر گرفتن تغییر شکل ماسه در حل کنید.

$$1 \times \delta_D = \int \frac{mM}{EI} dx + \sum \frac{n_i N_i}{EA} L_i$$



$$* \sum \frac{n_i N_i}{EA} L_i = 0$$

$$\delta_D = \frac{1450}{EI}$$

$$\delta_D = \frac{1450}{EI}$$

$$1 \times \theta_D = \int \frac{mM}{EI} dx + \sum \frac{n_i N_i L_i}{EA_i}$$

$$\sum \frac{n_i N_i}{EA_i} L_i = \frac{1}{EA} (0.2)(-30)(4) + 0$$

$$+ \frac{1}{EA} (-0.2)(-70)(4) = \frac{32}{EA}$$

$$\theta_D = -\frac{93.75}{EI} + \frac{32}{EA}$$

