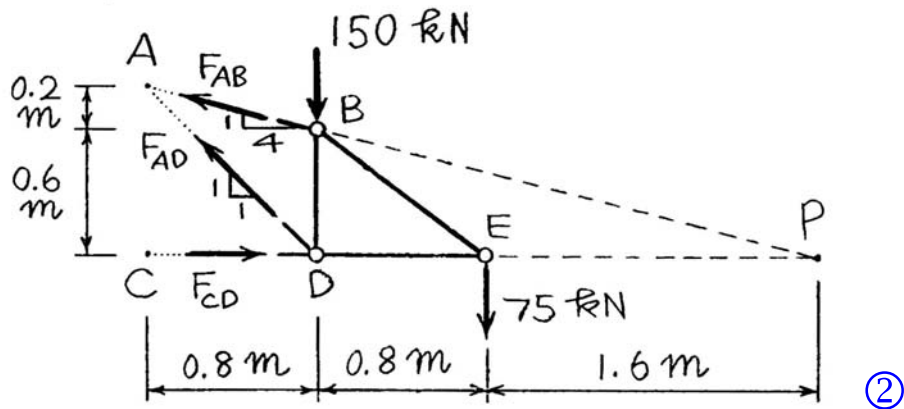
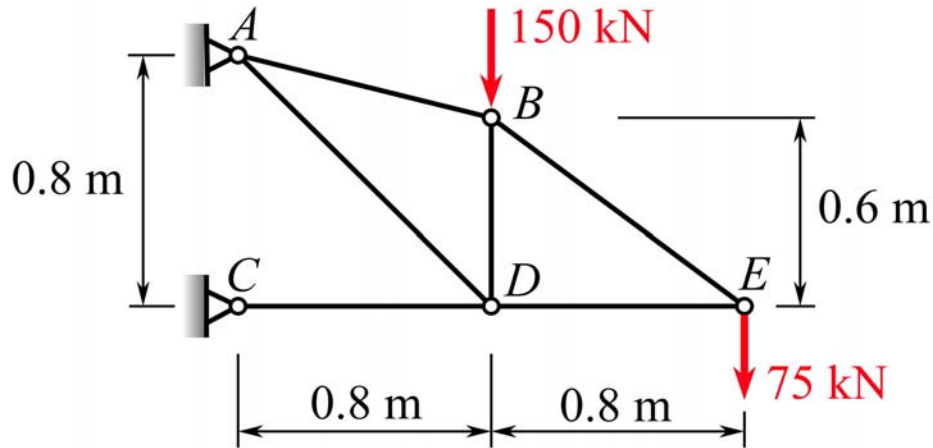


MEEG 3013 Quiz #2.m04.072

Members AB and AD of the truss shown consist of 25-mm-diameter steel rods ($E = 200 \text{ GPa}$). For the loading shown, determine the elongation of (a) rod AB , (b) rod AD .



$$F_{AB} = 103.078 \text{ kN T} \quad \textcircled{2} \quad F_{AD} = 282.843 \text{ kN T} \quad \textcircled{2}$$

$$\delta_{AB} = \frac{103.078 \times 10^3 \cdot \sqrt{(0.8)^2 + (0.2)^2}}{\pi(0.025/2)^2 \cdot 200 \times 10^9} = 0.8658 \times 10^{-3}$$

$$\delta_{AD} = \frac{282.843 \times 10^3 \cdot 0.8\sqrt{2}}{\pi(0.025/2)^2 \cdot 200 \times 10^9} = 3.2595 \times 10^{-3}$$

$$\delta_{AB} = 0.866 \text{ mm} \quad \textcircled{2}$$

$$\delta_{AD} = 3.26 \text{ mm} \quad \textcircled{2}$$