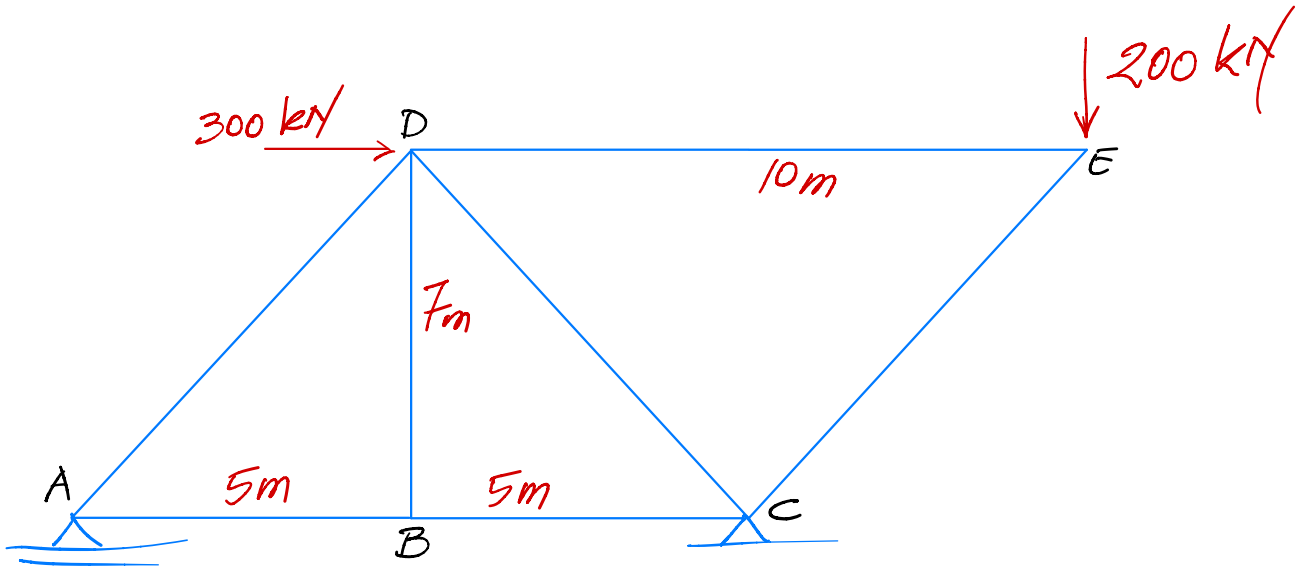
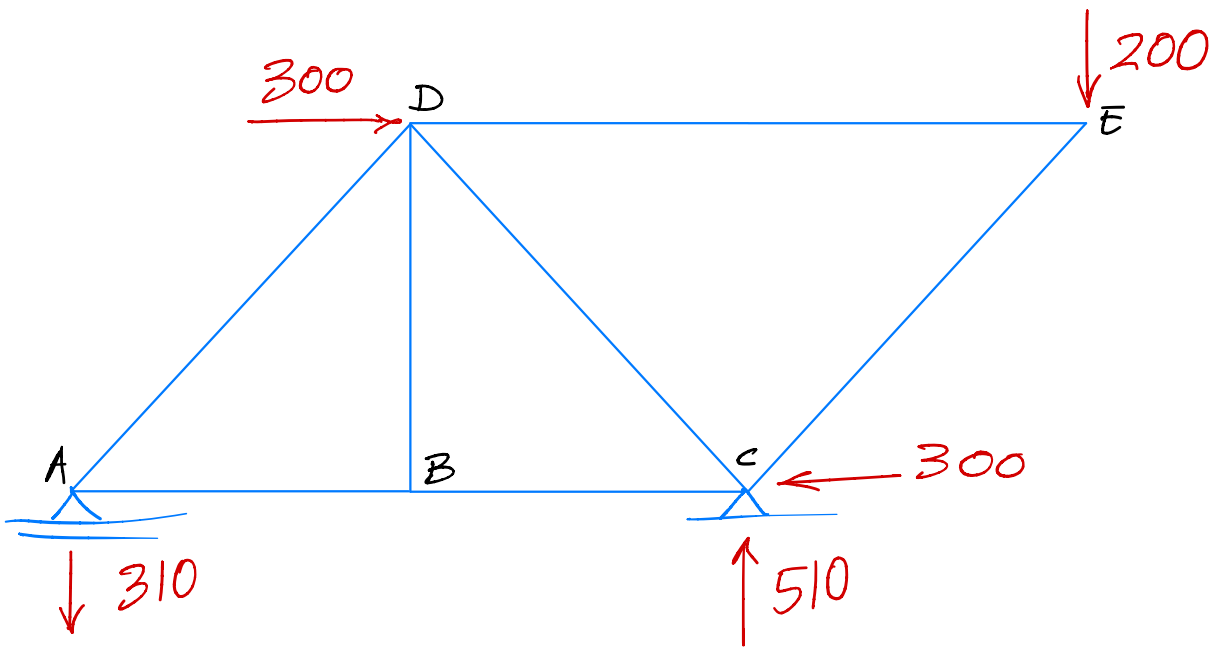


Example: Another statically determinate truss

Objective: Practice joint equilibrium using “force polygons” and trigonometry



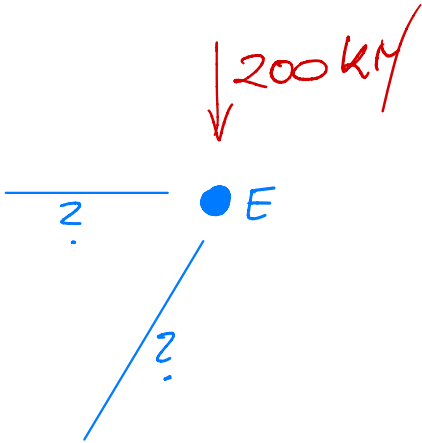
The reaction forces are determined by global horizontal, vertical, and moment equilibrium:



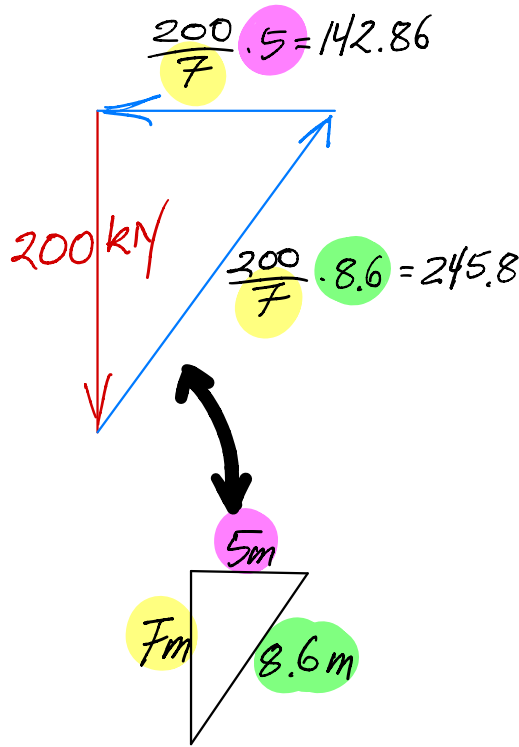
We now do joint equilibrium, joint by joint. We can always address a joint that has two or less unknown forces.

Joint E:

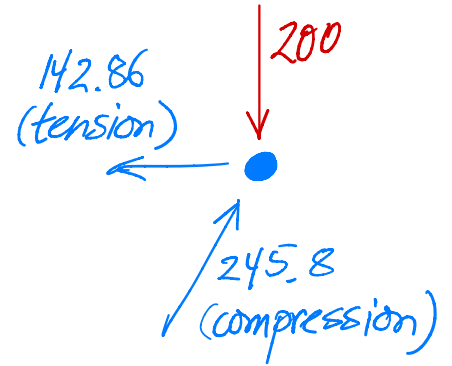
①



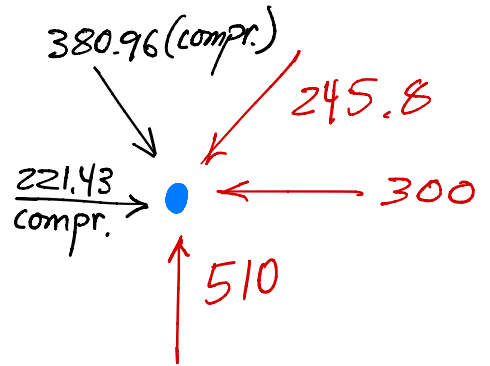
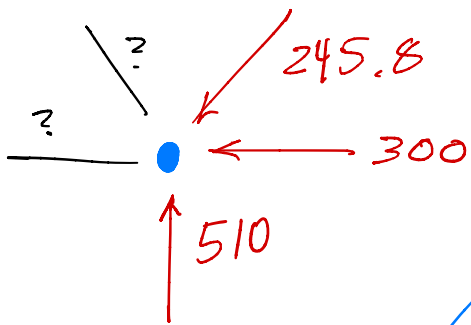
②



③



Joint C:

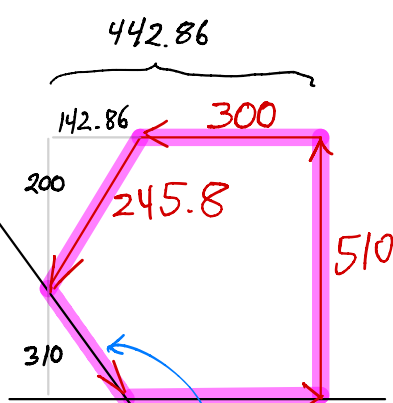


Not entirely to scale: sorry

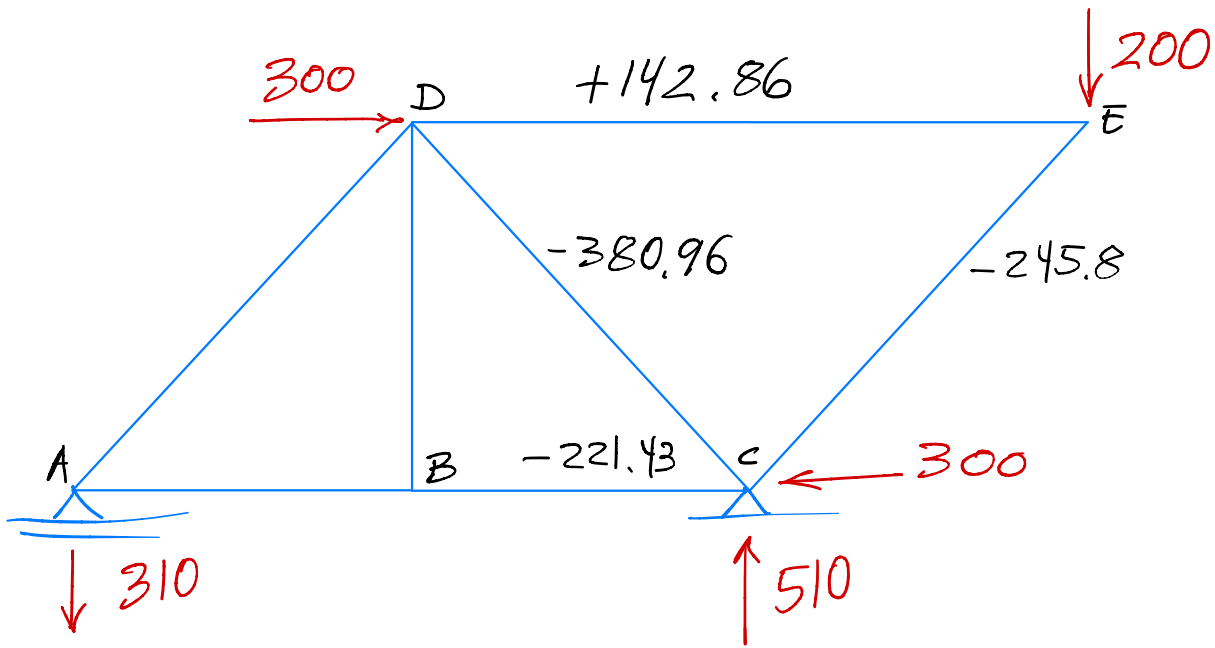
$$\frac{x}{310} = \frac{8.6}{7} \Rightarrow x = 380.96$$

$$\frac{x}{310} = \frac{5}{7} \Rightarrow x = 221.43$$

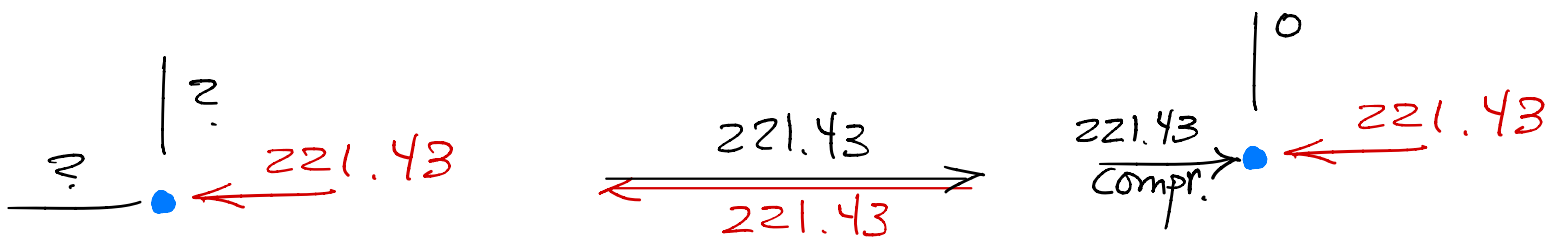
$$442.86 - 221.43 = 221.43$$



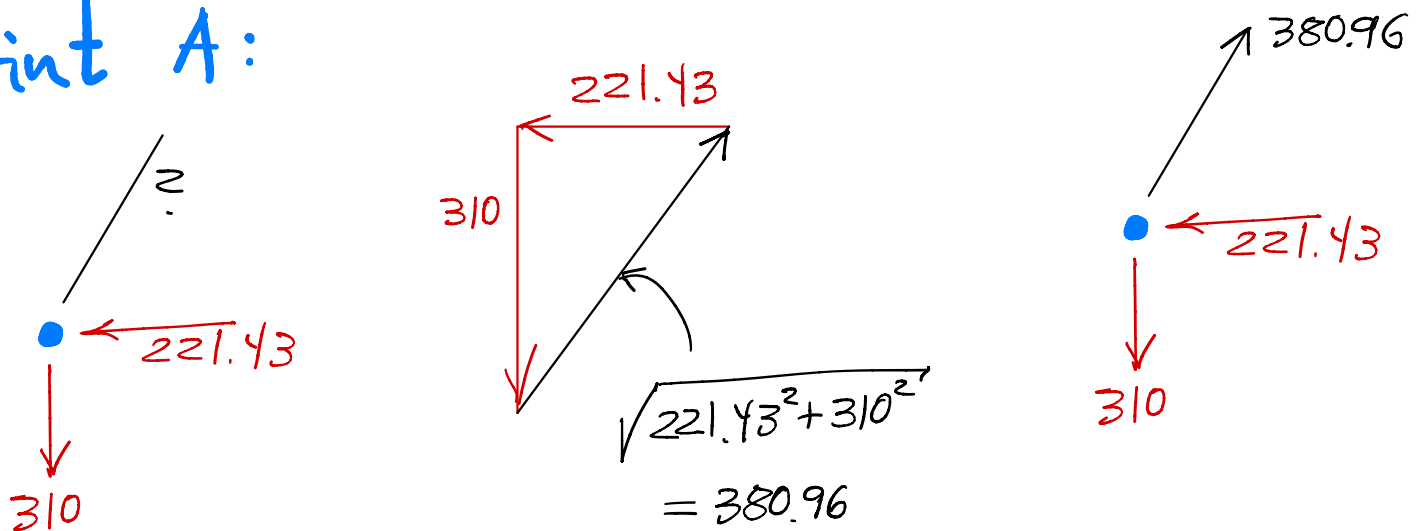
What we have thus far:



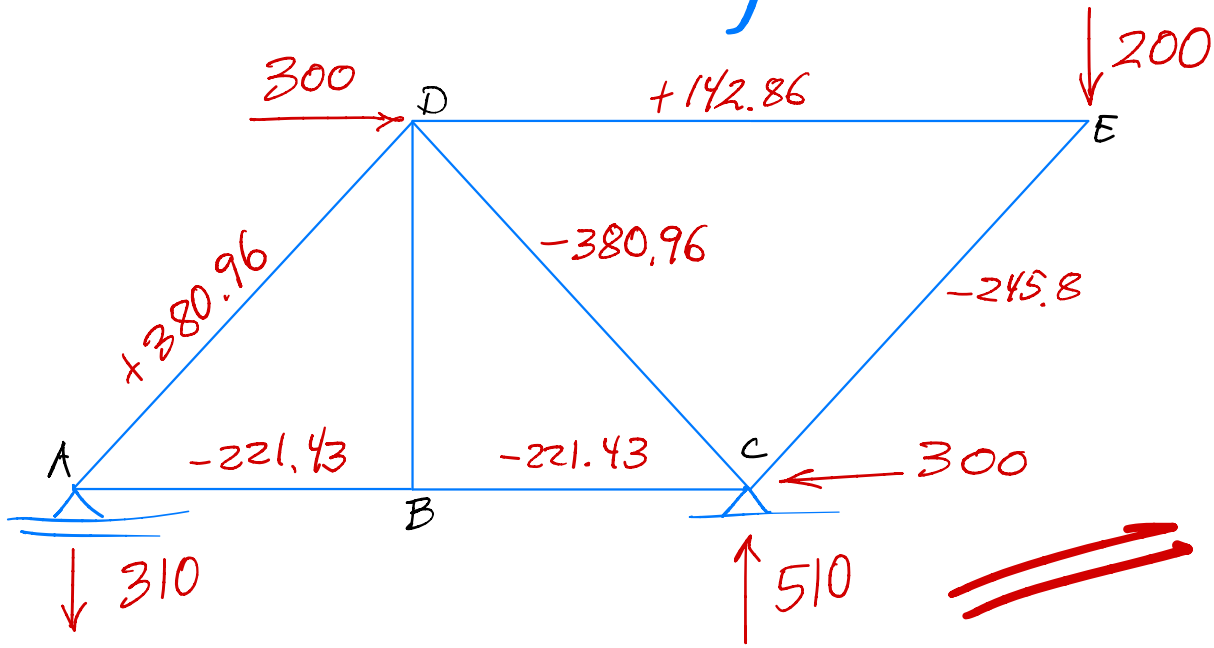
Joint B:



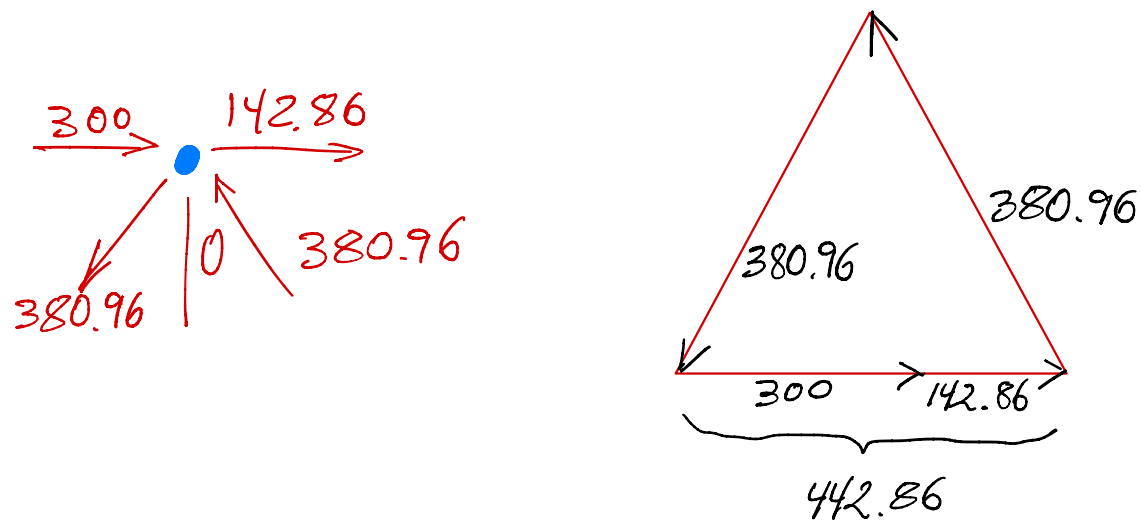
Joint A:



What we have thus far:



All force now known. Check equil.
at joint D:



$$\text{check: } \frac{380.96}{\left(\frac{442.86}{2}\right)} = \frac{8.6\text{m}}{5\text{m}} = 1.72$$