



Announcements

- Remember to submit your CATME Mid-course Survey today!

- Upcoming deadlines:

- Saturday (10/6) – EXTENSION!
 - ME HW11
- Tuesday (10/10)
 - PL HW12
- Thursday (10/12)
 - ME HW13
- Friday (10/13)
 - WA #2

1
↑
check website



imgur.com/jwsfAfh

Recap

- Truss Analysis

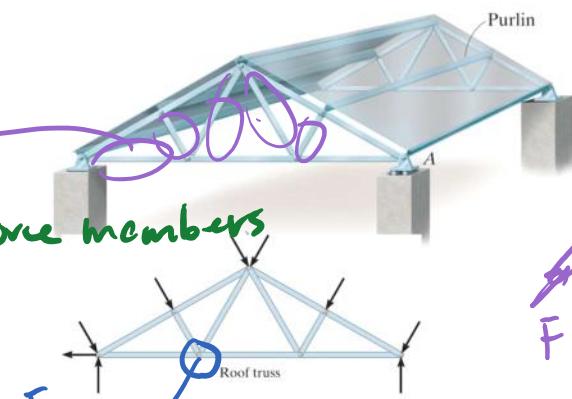
• Truss member: 2-force members

- Joint/pin method

• Tension / Compression
 "Pulling" "Pushing" F_i

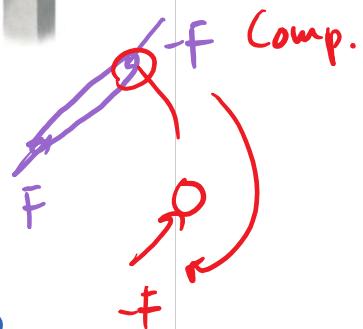
- Zero force member

• No external load. ✓



$$\sum F_x = 0$$

$$\sum F_y = 0$$

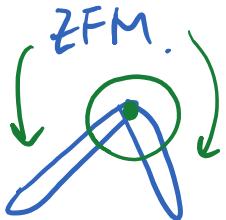


① 2 members

2

Non-collinear

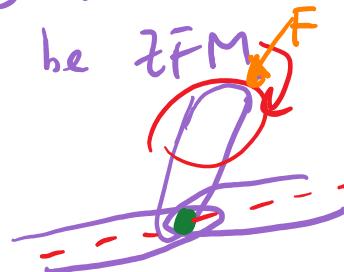
Both members are



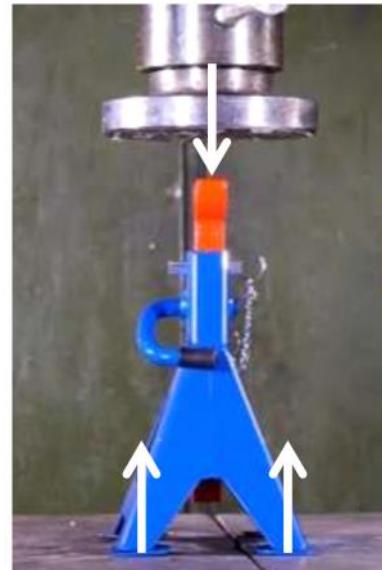
② 3 members

2 are collinear

3rd member must

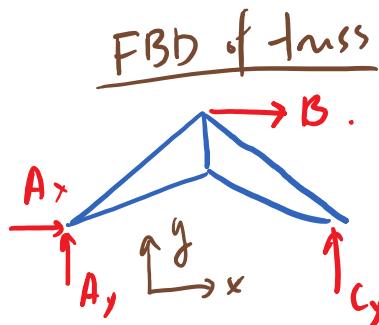


Tension vs. Compression



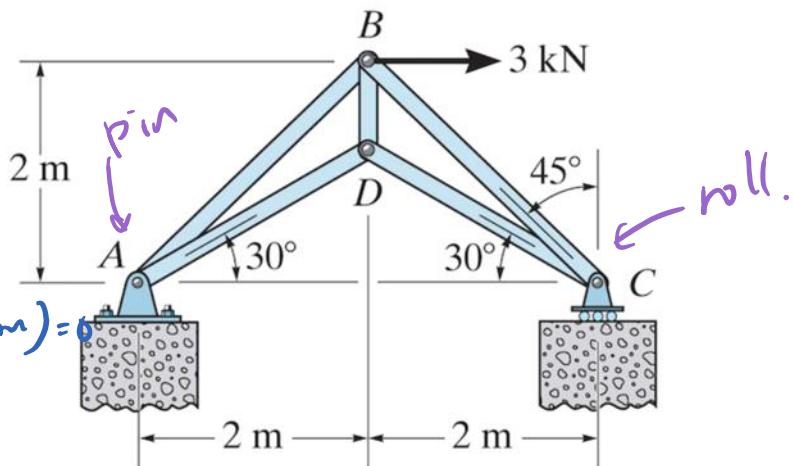
Rigid bodies respond differently to tension versus compression.
(YouTube Clips)

We will determine the force in each member of the truss and indicate whether the members are in tension or compression.



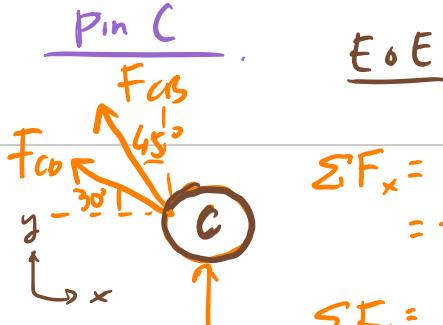
EoE for truss

$$\begin{aligned}\sum M_A &= C_y(4m) - B(3m) = 0 \\ \Rightarrow C_y &= 1.5 \text{ kN}\end{aligned}$$



$$\begin{aligned}⑥ \quad \sum F_y &= A_y + C_y = 0 \\ \Rightarrow A_y &= -C_y = -1.5 \text{ kN}\end{aligned}$$

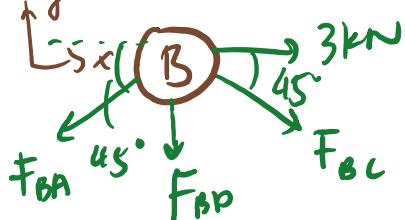
$$\begin{aligned}\sum F_x &= A_x + 3 \text{ kN} = 0 \\ \Rightarrow A_x &= -3 \text{ kN}\end{aligned}$$



$$\begin{aligned}\sum F_x &= 0 \\ &= -F_{CD} \cos 30^\circ - F_{CB} \sin 45^\circ\end{aligned}$$

$$\begin{aligned}\sum F_y &= 0 \\ &= F_{CD} \sin 30^\circ + F_{CB} \cos 45^\circ + C_y\end{aligned}$$

Pin B EoE



$$\sum F_x = 0 = 3 \text{ kN} + F_{BC} \cos 45^\circ - F_{BA} \cos 45^\circ$$

$$\sum F_y = 0 = -F_{BA} \sin 45^\circ - F_{BD} - F_{BC} \sin 45^\circ = 0$$