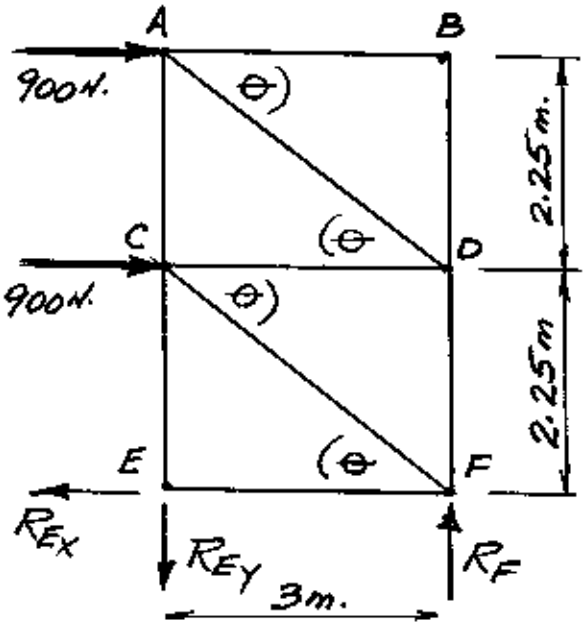


6.6 p.287

STEP (1) SOLVE FOR REACTIONS – EXTERNAL FORCES ON RIGID BODY

$\Sigma F_x = 0 = 900^N + 900^N - R_{EX}$

$\boxed{R_{EX} = 1800^N \leftarrow}$

$\Sigma F_Y = 0 = -R_{EY} + R_F$?

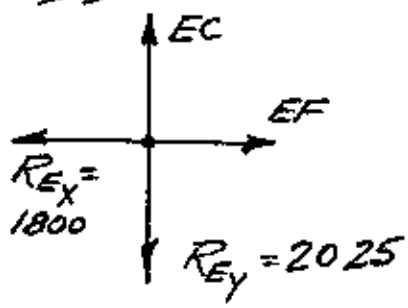
$\Sigma M_E = 0 = -900^N(4.5m) - 900^N(2.25m) + R_F(3m)$

PINNED END

$\boxed{R_F = 2025^N \uparrow}$ $\therefore$ $\boxed{R_{EY} = 2025^N \downarrow}$

STEP (2) INTERNAL FORCES

JT. E has 2 UNKNOWNS. All other joints have 3 or more unknowns.

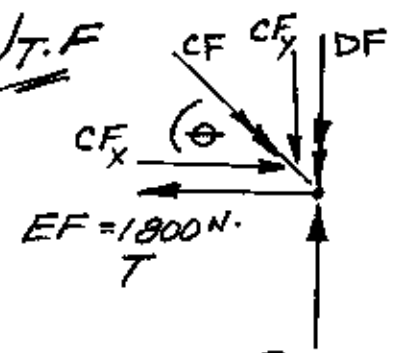


BY OBSERVATION

$\boxed{EC = 2025^N \cdot T}$

$\boxed{EF = 1800^N \cdot T}$

JT. F



NEED COMPONENTS FOR CF

$\theta = \tan^{-1} \frac{2.25m}{3m} = 36.87°$

$\Sigma F_x = 0 = -1800 + CF_x$

$CF = \frac{1800}{\cos 36.87°} = \boxed{2250^N \ C = CF}$

$\Sigma F_Y = 0 = -CF_y - DF + 2025^N$

$DF = 2025 - 2250 \sin 36.87°$

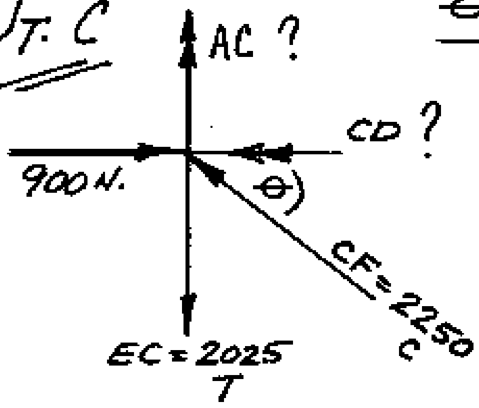
$\boxed{DF = 675^N \ C}$

CONTINUE

$\theta = 36.87°$

6.6 continued

Jt. C



$$\Sigma F_x = 0 = 900^N - CD - CF\cos\theta$$

$$CD = 900^N - 2250\cos 36.87°$$

$$CD = -899.997$$

OPP. DIR.

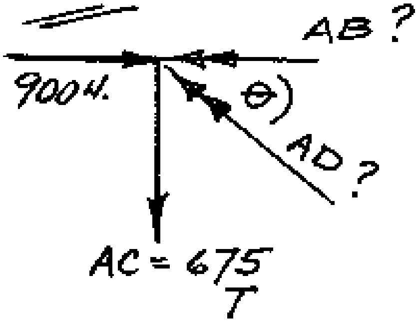
$\therefore$ **$CD = 900^N$ T**

$$\Sigma F_Y = 0 = AC - EC + CF\sin\theta$$

$$AC = 2025 - 2250\sin 36.87° = 674.9967$$

$\therefore$ **$AC = 675^N$ T**

Jt. A



$$\Sigma F_x = 0 = 900 - AB - AD\cos\theta$$

? ?

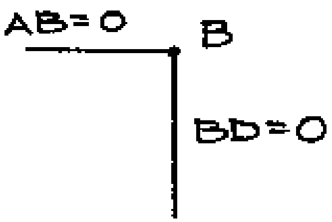
$$\Sigma F_Y = 0 = -675 + AD\sin 36.87°$$

$AD = 1125^{N.}$ C

$$\therefore AB = 900 - (1125)\cos 36.87°$$

AB = 0

MAKES SENSE WHEN YOU LOOK AT Jt. B



Summary

Member	Force	
AB	0	
AC	675	T
AD	1125	C
CD	900	T
CF	2250	C
CE	2025	T
EF	1800	T
DF	675	C