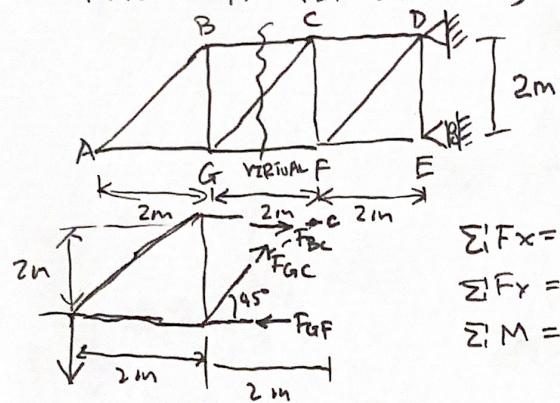


METHOD OF SECTIONS.

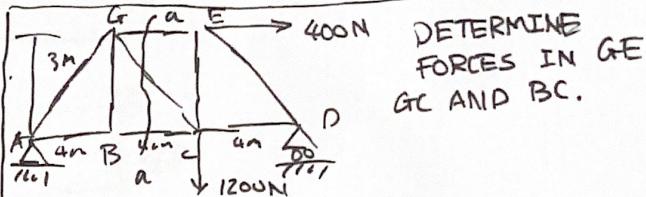
- METHOD OF SECTIONS.

 - IF WHOLE BODY IS IN EQUILIBRIUM, THEN ANY PART OF THE BODY SHOULD BE IN EQUILIBRIUM.
 - THROUGH A VIRTUAL CUT, A SECTION OF ENTIRE TRUSS GO THROUGH



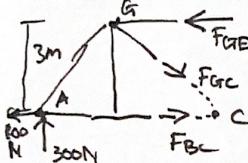
$$\begin{aligned}\sum F_x &= 0 \\ \sum F_y &= 0 \\ \sum M &= 0\end{aligned}$$

SECTION A-A HAS BEEN CHOSEN BECAUSE
IT CUTS THROUGH THE THREE MEMBERS
WHOSE FORCES ARE TO BE DETERMINED.



DETERMINE
FORCES IN GE
GC AND BC.

FREE BODY DIAGRAM:



$$+\sum M_G = 0; \text{ FIND } F_{Bc}:$$

$$-300\text{ N}(4\text{ m}) - 400\text{ N}(3\text{ m}) + F_{BC}(3\text{ m}) = 0$$

$$F_{BC} = 800 \text{ N}_1$$

$$\Sigma M_C = 0 ; \quad -300N(ym) + F_{GE}(3m) = 0$$

$$F_{GE} = 800\text{N}$$

$$+\uparrow \sum F_y = 0; \quad 300 \text{ N} - \frac{3}{5} F_{Gc} = 0$$

$$F_{GC} = 500\text{N}$$

STATICALLY DETERMINATE

$$F_{GC} = 500\text{N}$$

STATICALLY DETERMINATE IF:

$$m+3=2j$$

$m+3 < 2j$, THE STRUCTURE IS UNSTABLE AND WILL COLLAPSE.

$M+3 > 2j$, THE STRUCTURE HAS REDUNDANT MEMBERS, CAN'T BE DETERMINED THE FORCES. STATICALLY INDETERMINATE

$$+\uparrow \sum_i F_y = 0;$$

$$900 + (-400N) + \Delta y - 1200 = 0 \quad (\rightarrow \sum M_A = 0)$$

$$\therefore A_y = 1200 - 900 \quad \# 12Dy - 8 \times 1200 - 3 \times 400 = 0$$

$$Ay = 300 \text{ N}, \quad Dy = \frac{8x+1200 + 5x+500}{+12} \\ Dy = 900 \text{ N}$$

$$P_x = 900 \text{ N},$$

LIMITATIONS OF FORCE ANALYSIS

$$\sum F_x = 0$$

$$\sum F_y = 0$$

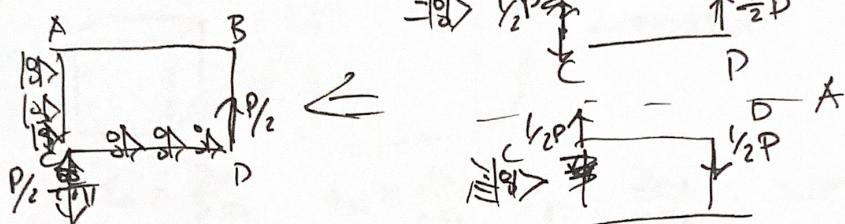
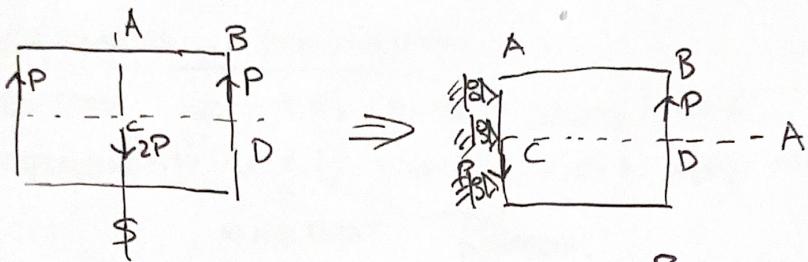
$$\sum m = 0$$

CAN ONLY
SOLVE STATICALLY
DETERMINATE
STRUCTURES.

STATICALLY DETERMINATE :

- 3 UNKNOWN REACTION FORCE
(INCL. FORCES AND MOMENTS)
 - TRUSS HAS m MEMBERS AND
 J JOINTS. m UNKNOWNS AND
 $2J$ EQUILIBRIUM
EQUATIONS.

ASSUMPTIONS



MUST NOT CONSTRAIN

ζ U_2 BECAUSE
Y-drive
 $P/2$ WOULD BECOME
ZERO.

1/8 SYMMETRY?

