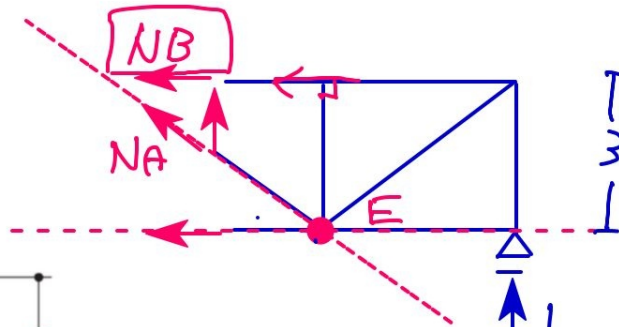
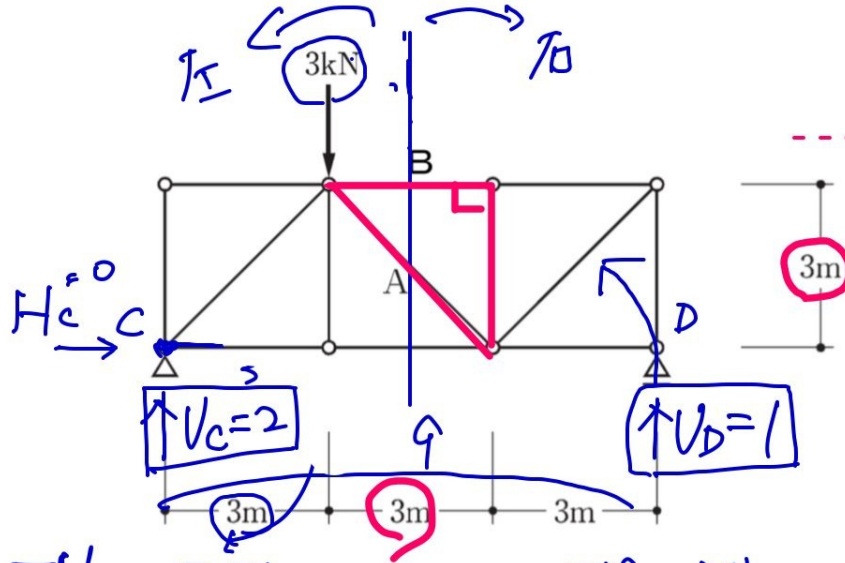


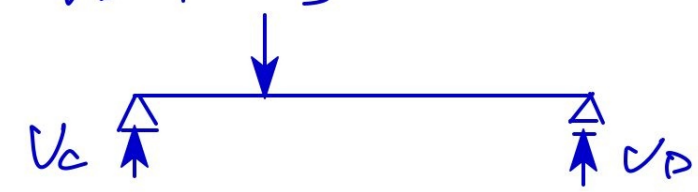
問題演習

A, B部材の軸方向力を求める

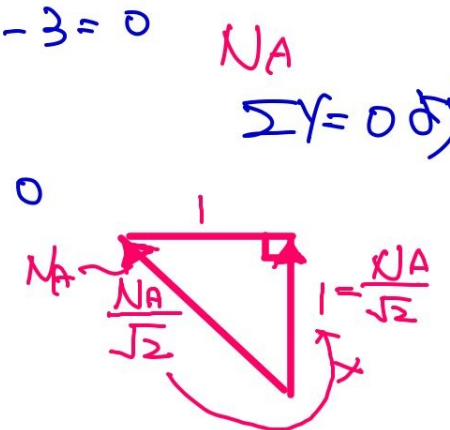


$$\begin{aligned} \sum M_C = 0 \text{ (clockwise)} \\ -V_D \times 9 + 3 \times 3 = 0 \\ -9V_D + 9 = 0 \\ 9V_D = 9 \\ V_D = 1 \end{aligned}$$

$$\begin{aligned} \sum F_y = 0 \text{ (upward)} \\ V_C + V_D - 3 = 0 \\ V_C - 2 = 0 \\ V_C = 2 \end{aligned}$$



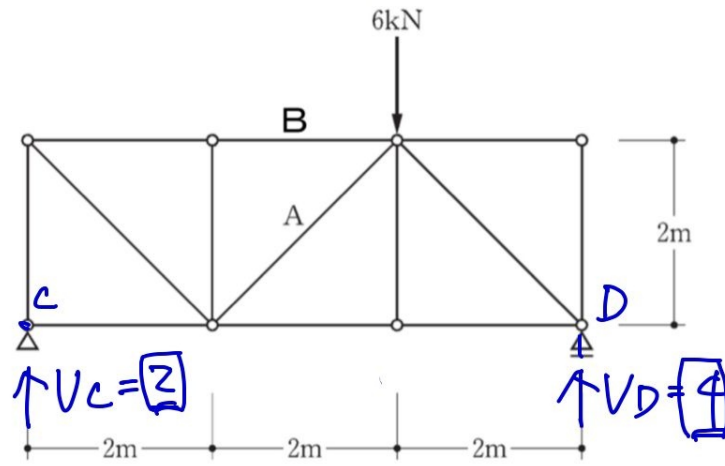
$$\begin{aligned} \sum M_E = 0 \text{ (clockwise)} \\ -N_B \times 3 - 1 \times 3 = 0 \\ -3N_B - 3 = 0 \\ 3N_B = -3 \quad N_B = -1 \text{ (Tension)} \end{aligned}$$



$$\begin{aligned} \sum F_y = 0 \text{ (upward)} \\ +\frac{N_A}{\sqrt{2}} + 1 = 0 \\ \frac{N_A}{\sqrt{2}} = -1 \\ N_A \times \sqrt{2} = -1 \cdot \sqrt{2} \\ N_A = -\sqrt{2} \text{ (Tension)} \end{aligned}$$

問題演習

A, B部材の軸方向力を求める

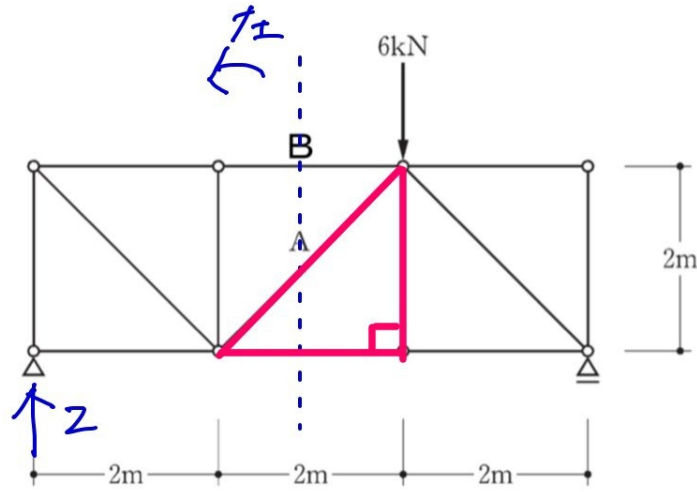


$$\begin{aligned} \sum M_C &= 0 \quad (\text{clockwise}) \\ -V_D \times 6 + 6 \times 4 &= 0 \\ -6V_D &= -24 \\ V_D &= \frac{-24}{-6} = 4 \quad (\text{up}) \end{aligned}$$

1. 反力を求める

問題演習

A, B部材の軸方向力を求める

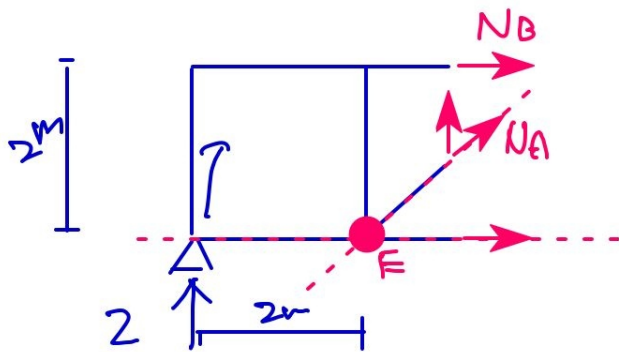


2. 断面12片を取り出す

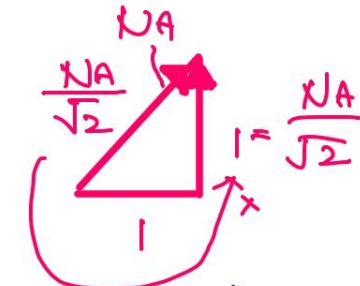
3. 断面12の軸方向力
tの向きは仮定する

4. 力のつり合い式で求める

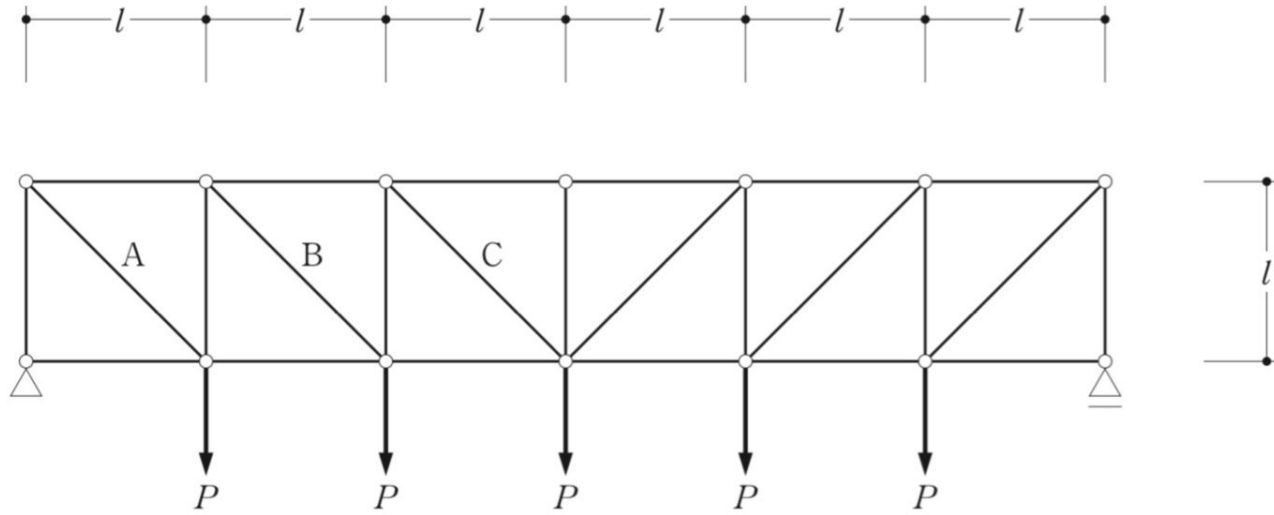
N_Bを求める N_Aを求める



$\Sigma M_E = 0$ より
 $N_B \times 2 + 2 \times 2 = 0$
 $2N_B = -4$
 $N_B = -2$ (T)

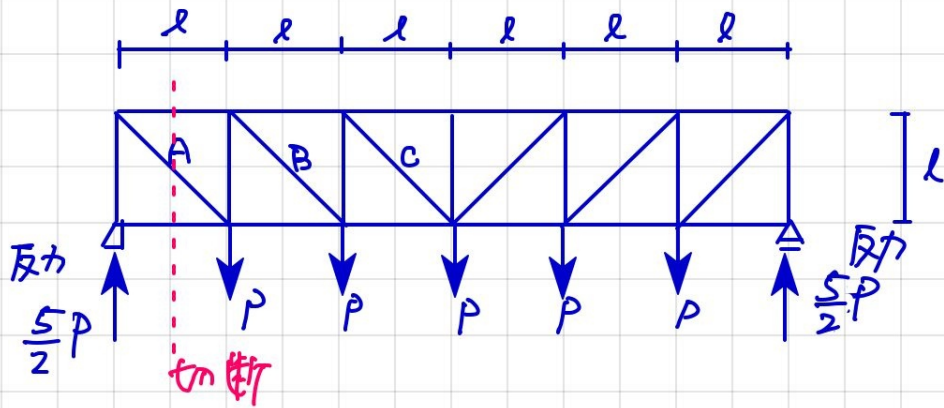


$\Sigma Y = 0$ より
 $\frac{N_A}{\sqrt{2}} + 2 = 0$
 $\frac{N_A}{\sqrt{2}} = -2$
 $N_A = -2\sqrt{2}$ (T)



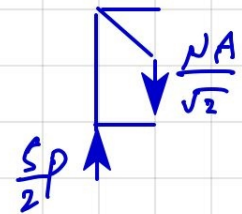
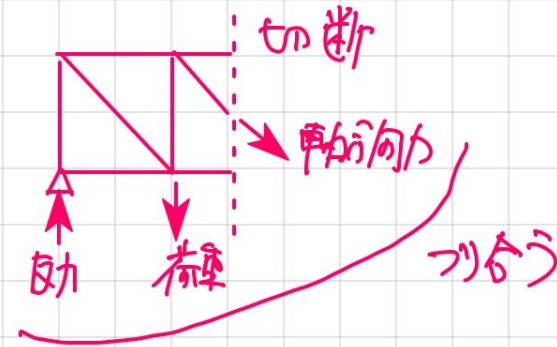
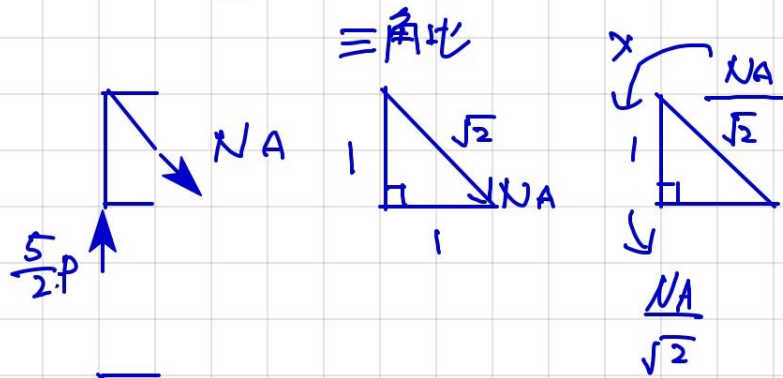
	N_A	:	N_B	:	N_C
1.	1	:	1	:	1
2.	3	:	2	:	1
3.	4	:	2	:	1
4.	5	:	3	:	1

NO.5 $N_A = N_B = N_C$ である



ポイント 切断法 (にお) Y方向の力のつり合い式を用いて斜材の軸方向力を求める

切断法: 軸方向力を求める... 部材で切断して力のつり合いにお) 応力を求める方法



$\Sigma Y = 0$ (Y方向の力を全て合計すると0になる)

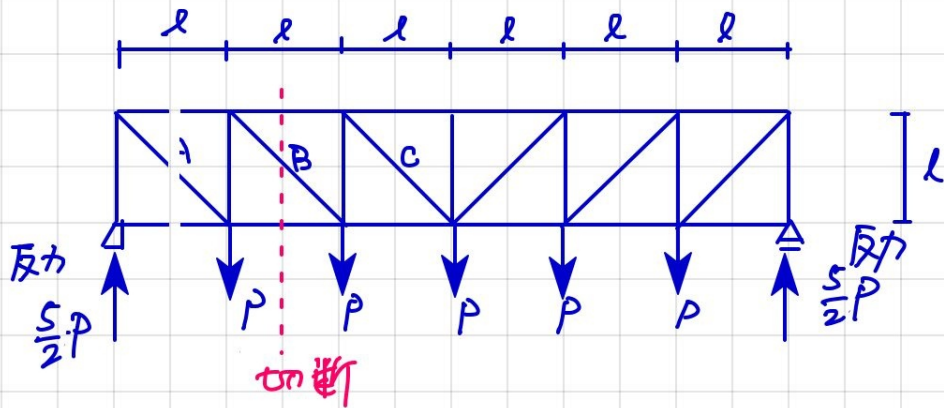
$$\frac{5P}{2} - \frac{N_A}{\sqrt{2}} = 0$$

$$\frac{N_A}{\sqrt{2}} = \frac{5P}{2}$$

$$N_A = \frac{5\sqrt{2}}{2} P$$

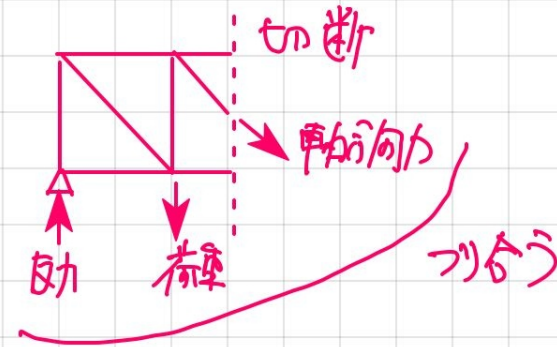
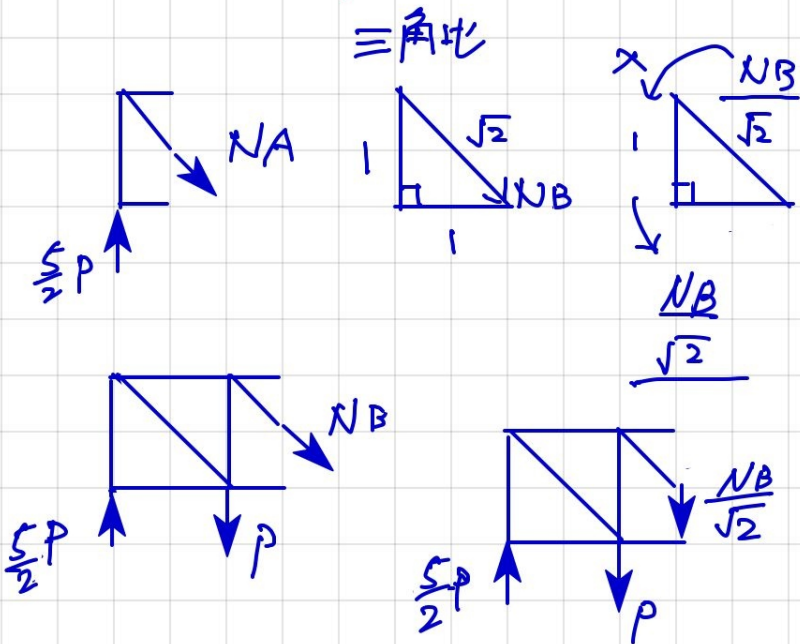
上向き+
下向き-

NO.5 $N_A = N_B = N_C$ である



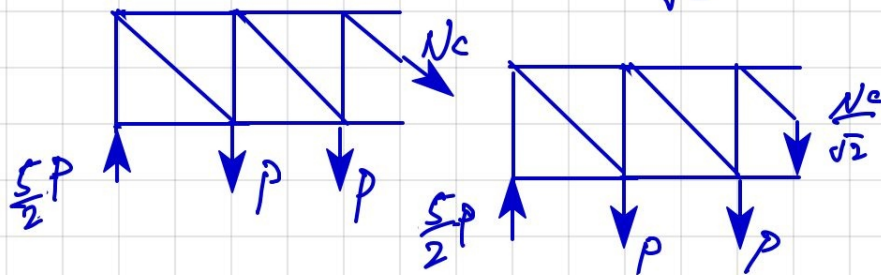
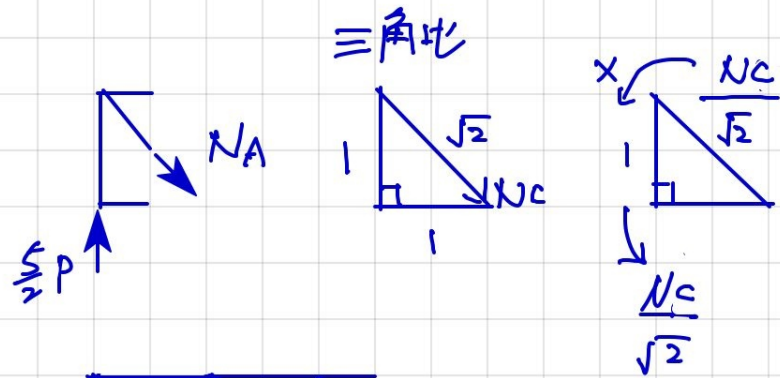
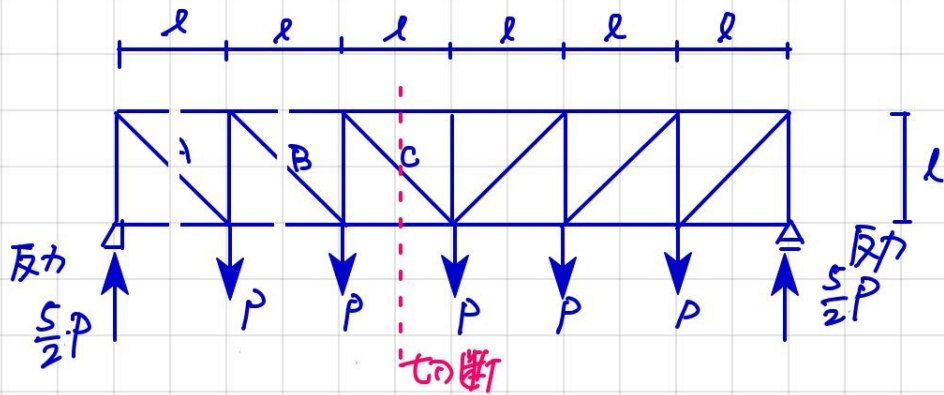
ポイント 切断法 (にお) Y方向の力のつり合い式を用いて斜材の軸方向力を求める

切断法: 軸方向力を求める... 部材で切断して力のつり合いにお) 応力を求める方法



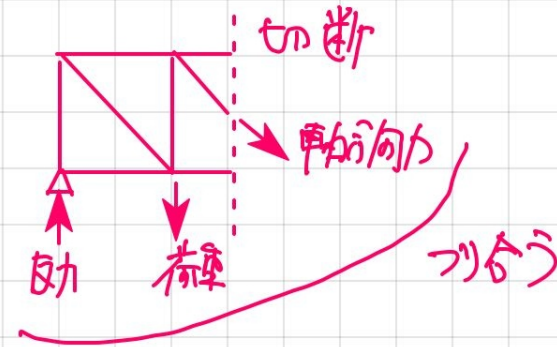
$$\begin{aligned} \sum Y = 0 \text{ にお} \\ \frac{5}{2}P - P - \frac{N_B}{\sqrt{2}} = 0 \\ \frac{N_B}{\sqrt{2}} = \frac{3}{2}P \\ N_B = \frac{3\sqrt{2}}{2}P \end{aligned}$$

NO.5 $N_A : N_B : N_C$ を求める



ポイント 切断法 (に) $\Sigma Y=0$ の力のつりあひ式を用いて斜材の軸方向力を求める

切断法: 軸方向力を求める... 部材で切断して力のつりあひに於いて応力を求める方法



$$\Sigma Y=0 \text{ (よ)} \quad N_A = \frac{5\sqrt{2}}{2} P$$

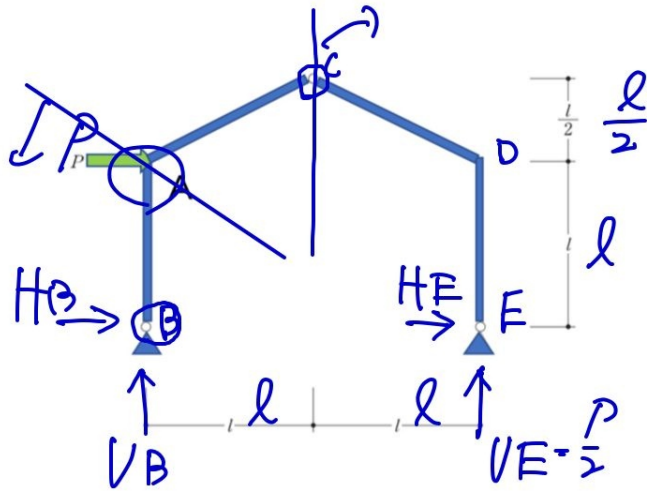
$$\frac{5}{2}P - P - P - \frac{N_C}{\sqrt{2}} = 0 \quad N_B = \frac{3\sqrt{2}}{2} P$$

$$\frac{N_C}{\sqrt{2}} = \frac{1}{2}P \quad N_C = \frac{\sqrt{2}}{2} P$$

$$N_C = \frac{\sqrt{2}}{2} P \quad N_A : N_B : N_C = 5 : 3 : 1$$

H30-No3

A点の曲げモーメントを求める。



$$\Sigma M_B = 0 \text{ (clockwise)}$$

$$\begin{aligned} & \curvearrowleft \quad \curvearrowright \\ & -V_E \times 2l + P \times l = 0 \\ & -V_E \times 2l = -P \times l \\ & V_E = \frac{P}{2} \end{aligned}$$

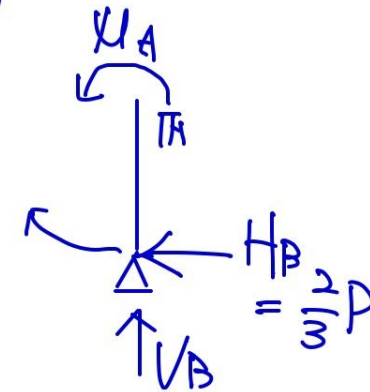
$$\Sigma X = 0$$

$$H_B + H_E + P = 0$$

$$H_B + \frac{P}{3} + P = 0$$

$$H_B - \frac{P}{3} + P = 0$$

$$H_B = -\frac{2}{3}P \text{ (Tension)}$$



$$\Sigma M_A = 0 \text{ (clockwise)}$$

$$\begin{aligned} & \curvearrowleft \quad \curvearrowright \\ & -M_A + \frac{2}{3}P \times l = 0 \\ & M_A = \frac{2}{3}Pl \end{aligned}$$

$$\Sigma M_C = 0 \text{ (clockwise)}$$

$$-H_E \times \frac{3}{2}l - \frac{P}{2} \times l = 0$$

$$-\frac{3}{2}H_E l = \frac{P}{2}l$$

$$H_E = -\frac{P \times l \times 2}{2 \times 3 \times l} = -\frac{P}{3} \text{ (Tension)}$$

