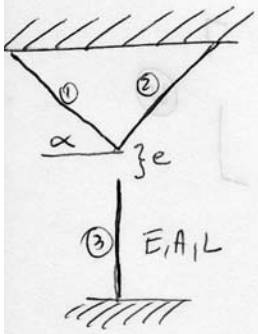
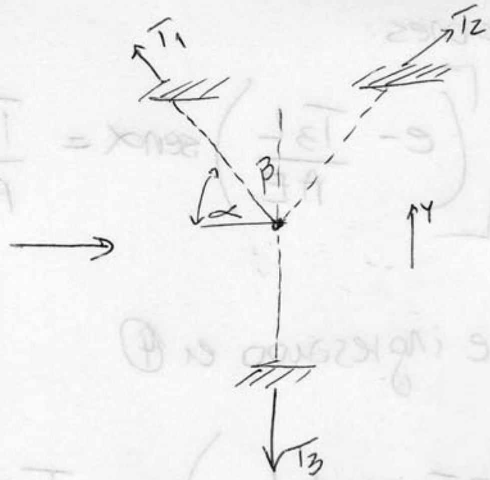
PAUTA





$T_1 = T_2$

(POR SIMETRÍA)

$$\boxed{\beta = 90 - \alpha}$$

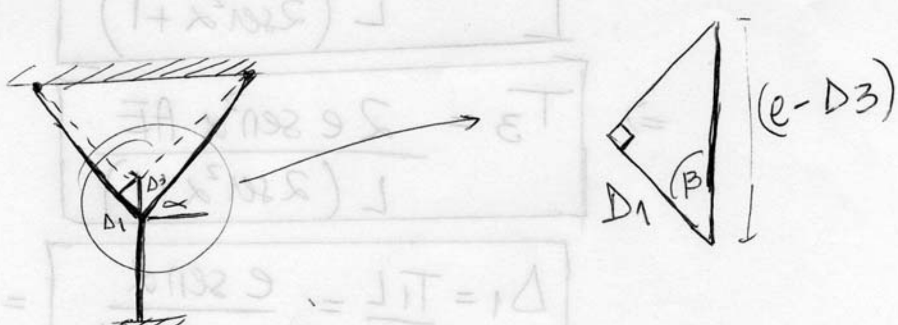
① Equilibrio:

$$\sum F_y = 0 \Rightarrow \left[2T_1 \,\text{sen}\,\alpha = T_3 \right] \quad ①$$

② Constitutividad:

$$\Delta_1 = \frac{T_1 \cdot L}{AE} \qquad \Delta_3 = \frac{T_3 L}{AE} \quad ②$$

③ Compatibilidad:



$$\Rightarrow \quad (e - \Delta_3) \cos\beta = \Delta_1$$

$$\Leftrightarrow \quad \left[(e - \Delta_3)\,\text{sen}\,\alpha = \Delta_1 \right] \quad ③$$

Mezclando ecuaciones:

$$② \rightarrow ③ \Rightarrow \left[\left(e - \frac{T_3 L}{AE}\right) \operatorname{sen}\alpha = \frac{T_1 L}{AE}\right] ④$$

Despejando de ① e ingresando en ④

$$\Rightarrow \left(e - \frac{2T_1 \operatorname{sen}\alpha\, L}{AE}\right) \operatorname{sen}\alpha = \frac{T_1 L}{AE}$$

$$\Rightarrow e \operatorname{sen}\alpha - \frac{2T_1 \operatorname{sen}^2\alpha\, L}{AE} = \frac{T_1 L}{AE}$$

$$\Rightarrow T_1 \left[\frac{2 \operatorname{sen}^2\alpha\, L + L}{AE}\right] = e \operatorname{sen}\alpha$$

$$\Rightarrow \boxed{T_1 = \frac{e \operatorname{sen}\alpha \cdot AE}{L\left(2\operatorname{sen}^2\alpha + 1\right)}} = T_2$$

$$\Rightarrow \boxed{T_3 = \frac{2e \operatorname{sen}^2\alpha\, AE}{L\left(2\operatorname{sen}^2\alpha + 1\right)}}$$

$$\boxed{\Delta_1 = \frac{T_1 L}{AE} = \frac{e \operatorname{sen}\alpha}{2\operatorname{sen}^2\alpha + 1}} = \Delta_2$$

$$\boxed{\Delta_3 = \frac{2e \operatorname{sen}^2\alpha}{2\operatorname{sen}^2\alpha + 1}}$$