

# AULAS 1 e 2 - DIAGRAMA TENSÃO x DEFORMAÇÃO

Aço → Ferro + Carbono

0,20 ~ 0,60%

$E = 20.000 \text{ KN/cm}^2$  ✓

1 KN - 100 kgf

$f_y = 25 \text{ KN/cm}^2$

$f_u = 40 \text{ KN/cm}^2$

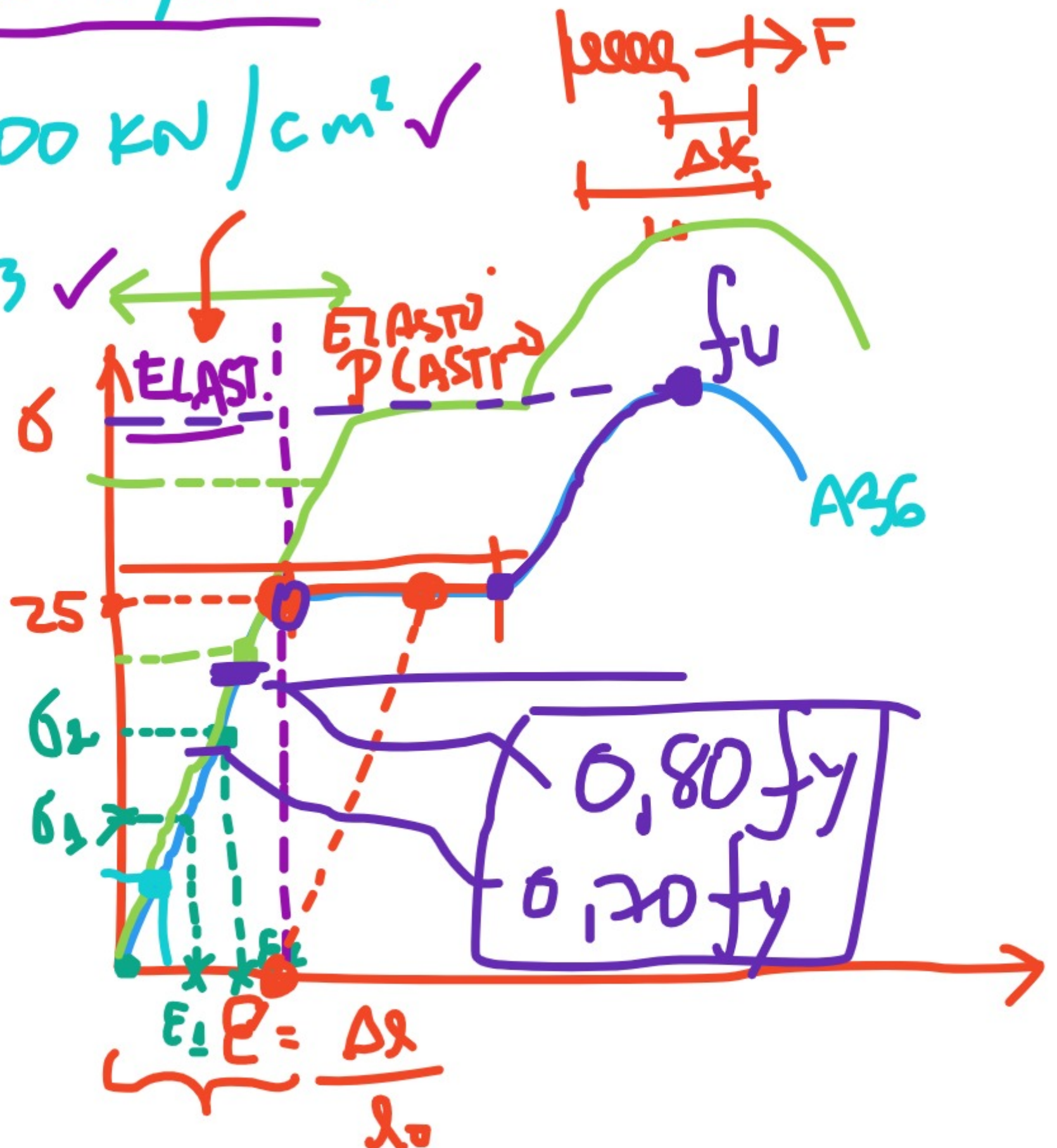
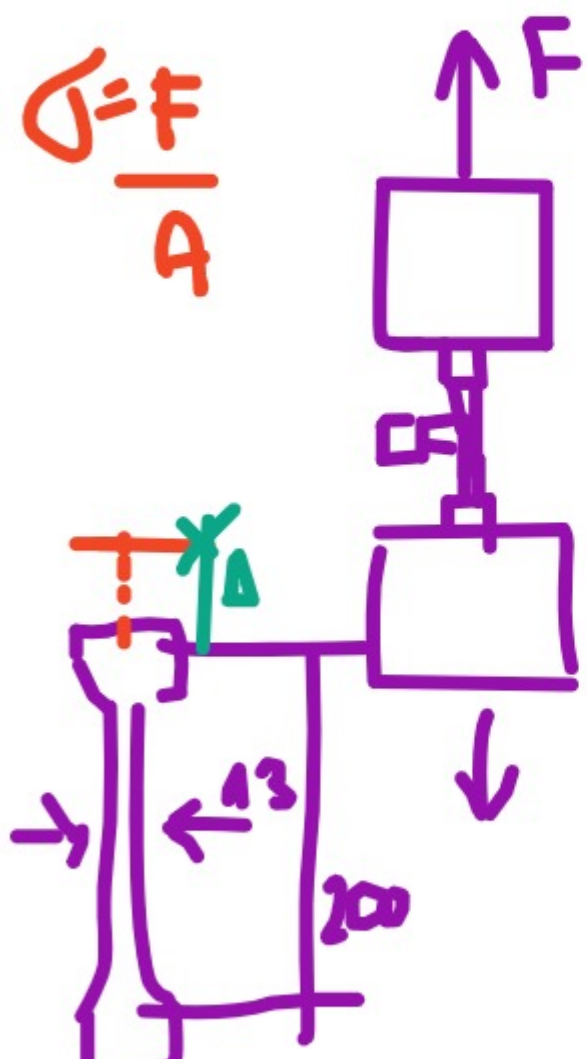
A36

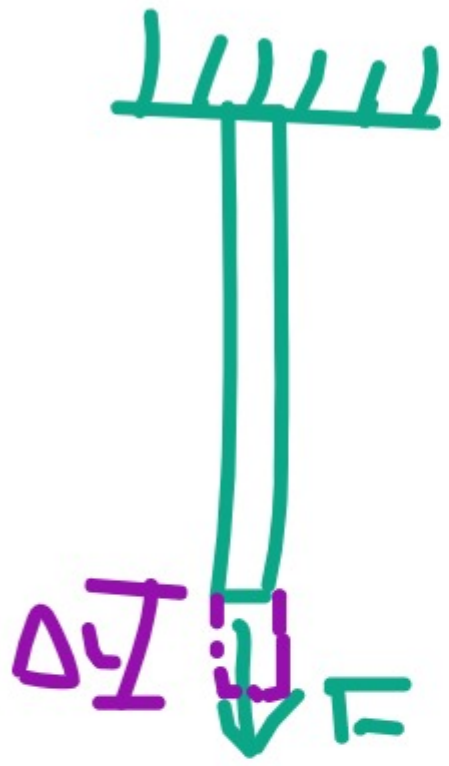
$K = \frac{F}{\Delta L} \rightarrow E = \frac{F}{\epsilon}$

$F = K \cdot \Delta L$

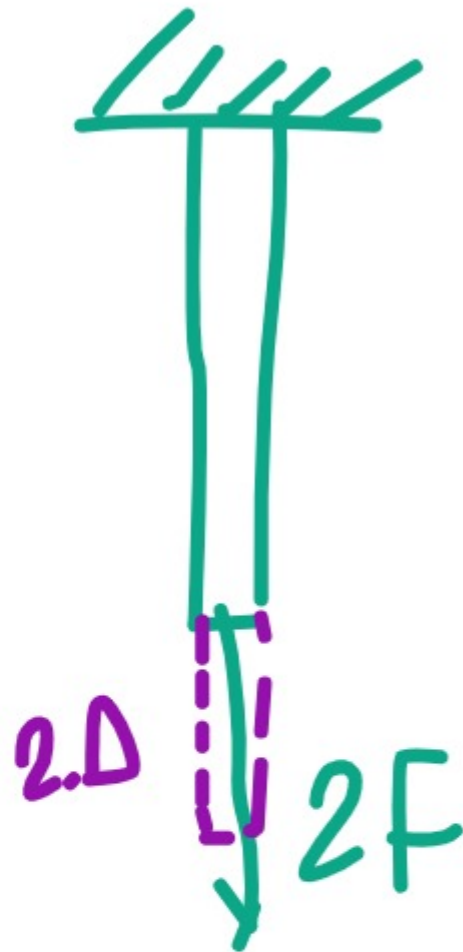
$G = 7700 \text{ KN/cm}^2$  ✓

$\nu = 0,3$  ✓

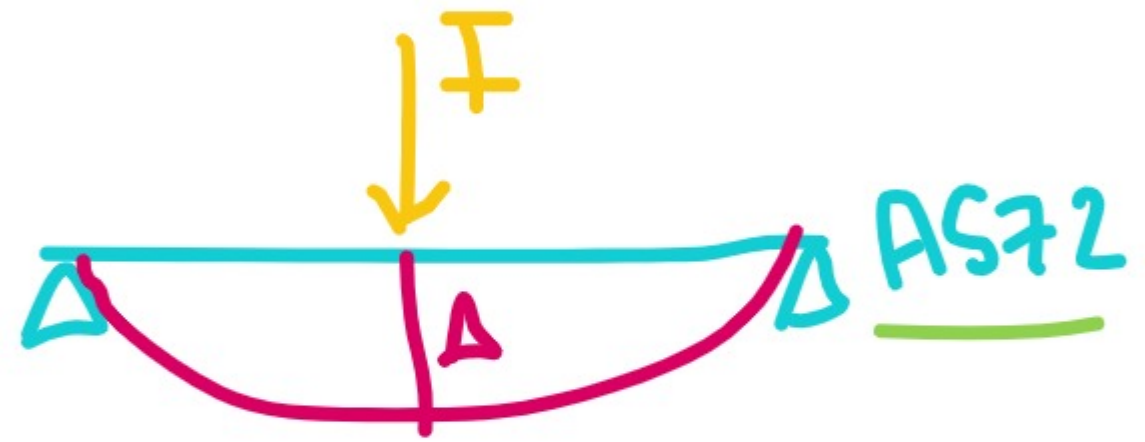
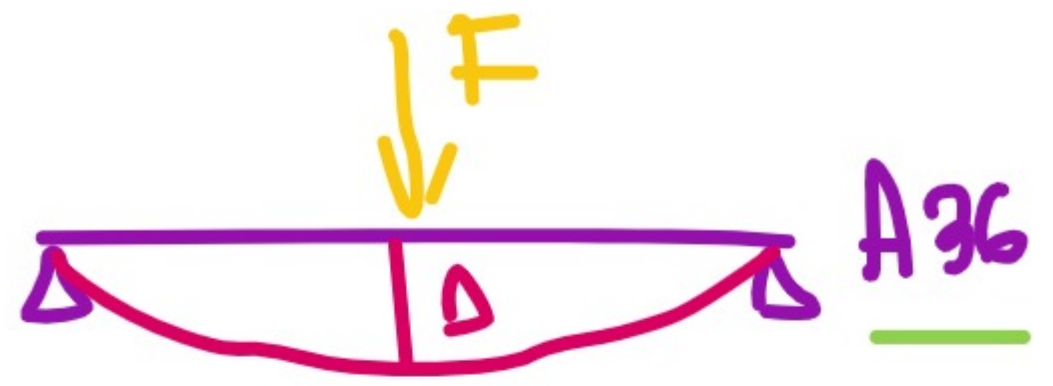




$$F = k \cdot x$$



$$k = \frac{F}{x}$$



||

$$\sigma = E \cdot \epsilon$$

$$F = k \cdot x$$

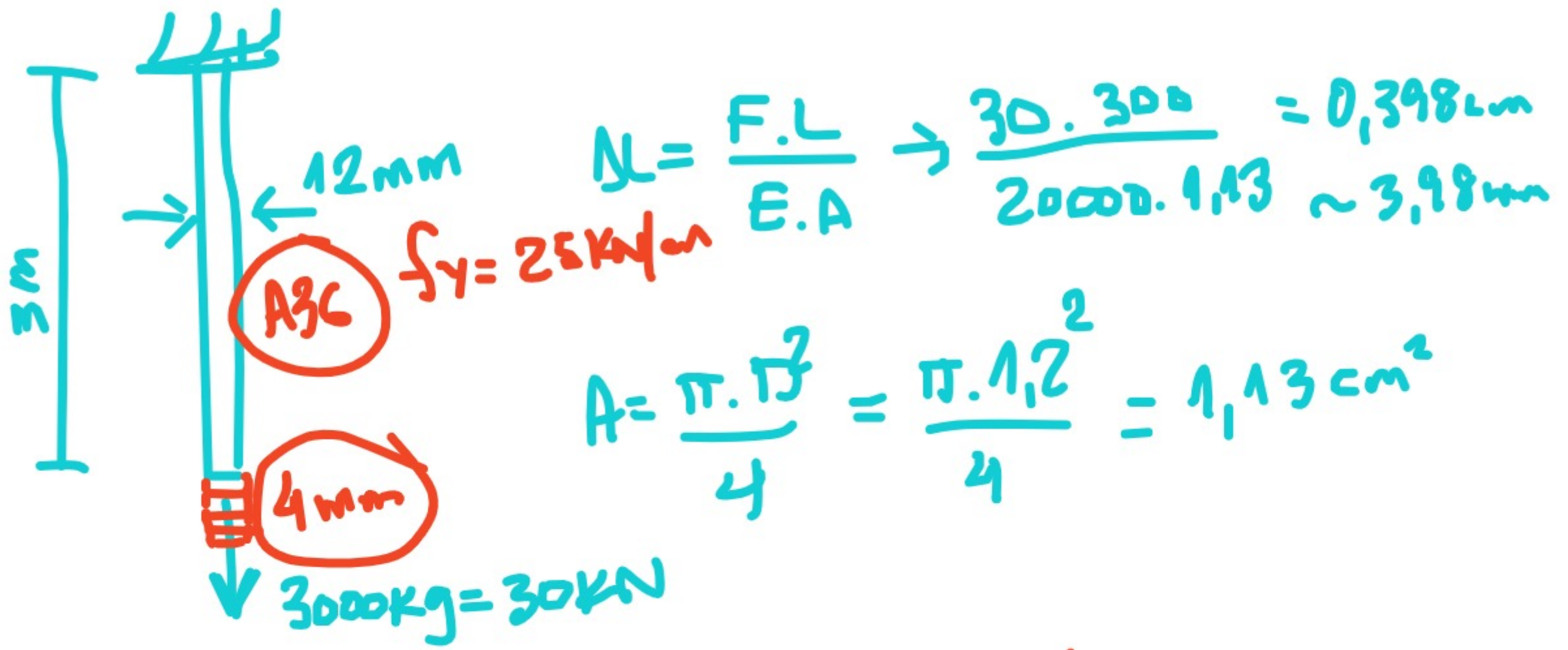
→

$$\frac{F}{A} = E \cdot \frac{\Delta L}{L_0}$$

$$\Delta L = \frac{F \cdot L_0}{E \cdot A}$$

→

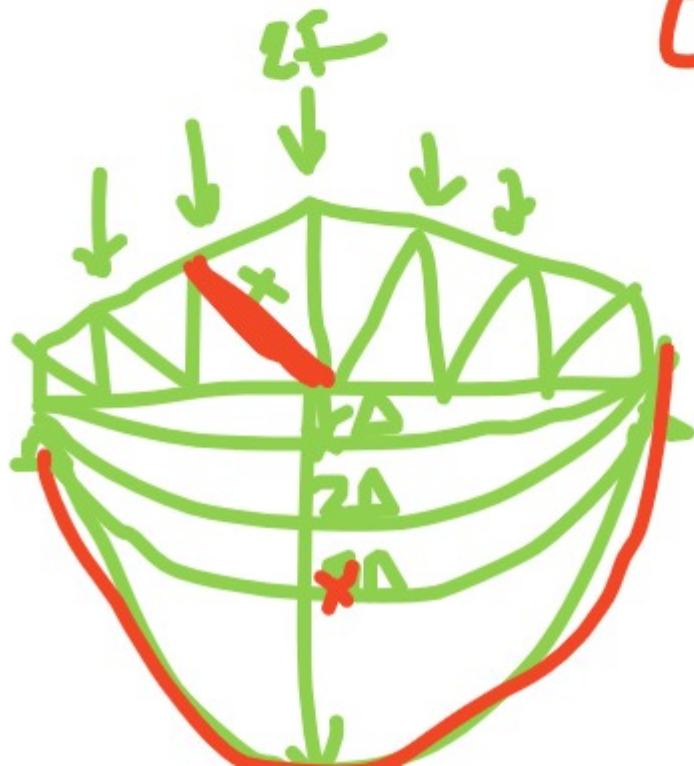
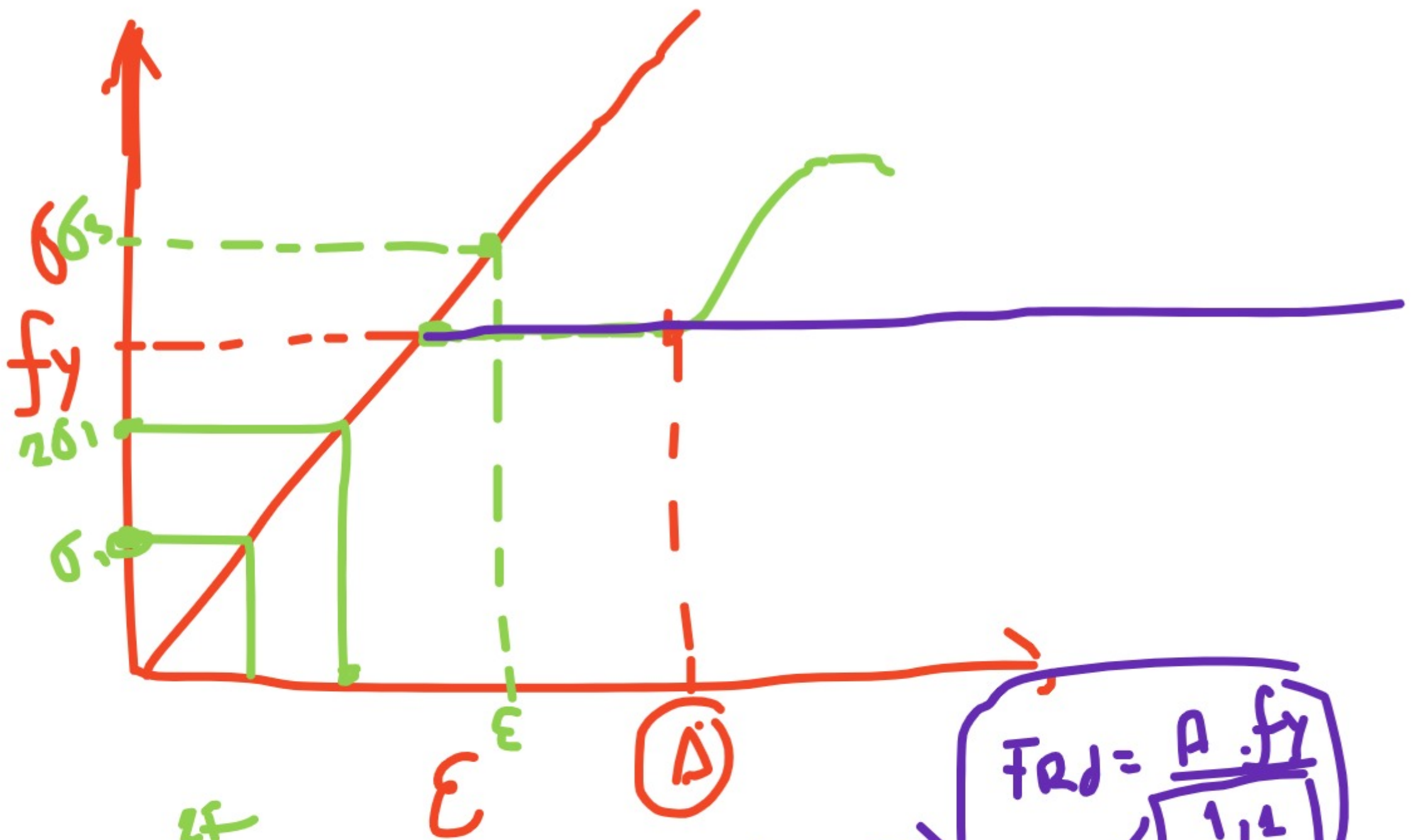
$$R = \frac{EA}{L_0}$$



$$\Delta = \frac{F \cdot L}{E \cdot A} \rightarrow \frac{30 \cdot 300}{20000 \cdot 1,13} = 0,398cm \sim 3,98mm$$

$$A = \frac{\pi \cdot d^2}{4} = \frac{\pi \cdot 1,2^2}{4} = 1,13cm^2$$

$$\sigma_A = \frac{F}{A} = \frac{30}{1,13} = \underline{\underline{26,54kN/cm^2}} > 25$$



$$F_{rd} = \frac{A \cdot f_y}{1,13}$$

$$F_{ed} = \frac{A_n \cdot \sigma_t \cdot f_u}{1,35}$$