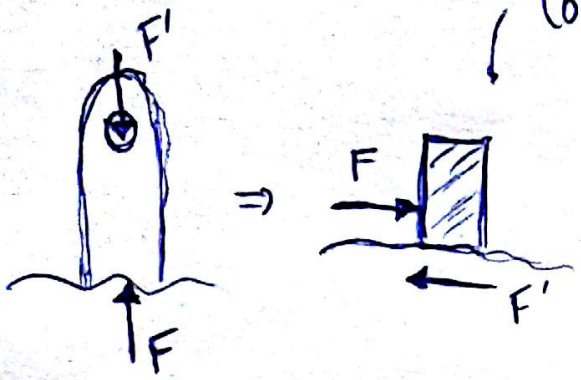
② $A_{AB} = (0.05)(0.006) = 3 \times 10^{-4}\ m^2$

a) $\sigma = \frac{F}{A} \rightarrow F = \sigma A = (-140 \times 10^6)(3 \times 10^{-4}) = -42\ kN$

Fuerza compresión ↓

↳ 42 kN ⊖

Tratamos DCL



Cortante simple

$\tau = \frac{F}{A} \rightarrow A = \frac{\pi}{4} d^2$

$\therefore$ [redacted] $d = \sqrt{\frac{4F}{\pi \tau}}$

$d = \sqrt{\frac{4(42 \times 10^3)}{\pi(80 \times 10^6)}} \approx 0.0258\ m \approx \underline{25.8\ mm}$

b) Esfuerzo de Apoyo

$\sigma_{AP} = \frac{F}{td}$, donde $\begin{cases} F = 42\ kN \\ t = 6\ mm \\ d = 25.8\ m \end{cases}$

$\therefore \sigma_{AP} = \frac{42 \times 10^3}{(0.006)(0.0258)} \approx \underline{271.3\ MPa}$