$\phi = 3\text{ m}$
$L = 6\text{m}$

1°) Calcular Fvertical

$$F_{v,iz} = V_d \cdot \overbrace{(\gamma_w \cdot SG_{iz})}^{\gamma_{iz}}$$
$$F_{v,iz} = \left[\left(\frac{A_{\bullet}}{2}\right) \cdot L\right] \cdot \left[\gamma_w \cdot SG_{iz}\right]$$
$$F_{v,iz} = \left[\frac{\pi D^2}{4} \cdot \frac{1}{2} \cdot 6m\right]\left[9.8\,\frac{kN}{m^3} \cdot 1.6\right]$$
$$F_{v,iz} = 332.5\text{ kN}$$

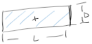
- En la derecha

$$F_{v,der} = V_d \cdot \gamma_D$$
$$= \left[\frac{\pi D^2}{4} \cdot \frac{1}{4} \cdot L\right] \cdot \left[\gamma_w \cdot SG_D\right]$$
$$= \left[\frac{\pi\, 3^2}{4} \cdot \frac{1}{4} \cdot 6\right] m^3 \cdot \left[9.8\,\frac{kN}{m^3} \cdot 0.8\right]$$
$$F_{v,der} = 83.1\text{ kN}$$

$$F_v = F_{v,iz} + F_{v,D}$$
$$F_v = 332.5\text{ kN} + 83.1\text{ kN}$$
$$F_v = 415.6\text{ kN}$$

2) Calcular F_H

2.1) Izquierda



$$h_{CG,iz} = \frac{D}{2} = 1.5m$$
$$F_{H,iz} = \left(h_{CG,iz} \cdot \gamma_{iz}\right) \cdot (D \cdot L)$$
$$F_{H,iz} = \left(\overbrace{1.5m \cdot \underbrace{9.8\,\frac{kN}{m^3}}_{\gamma_w} \cdot \underbrace{1.6}_{SG}}^{P_{CG}}\right) \cdot (3m \cdot 6m)$$
$$F_{H,A} = 423.4\text{ kN}$$

2.2) Derecha

$$F_{H,D} = P_{CG,D} \cdot A_D$$
$$F_{HD} = \left(h_{CG} \cdot \gamma_D\right) \cdot \left[\frac{D}{2} \cdot L\right]$$
$$F_{HD} = \left(\frac{D}{4} \cdot 0.8 \cdot 9.8\,\frac{kN}{m^3}\right)\left(\frac{D}{2} \cdot L\right)$$
$$F_{HD} = \left(\frac{3}{4}m \cdot 0.8 \cdot 9.8\,\frac{kN}{m^3}\right)\left(\frac{3m}{2} \cdot 6m\right)$$
$$F_{HD} = 52.92\text{ kN}$$

$$F_H = F_{iz} - F_D$$
$$F_H = 423.4\text{kN} - 52.92\text{ kN}$$
$$F_H = 370.5\text{ kN}$$
$$F_R = \sqrt{F_H^2 + F_v^2} = \sqrt{370.5 + 415.6}\text{ kN}$$
$$F_R = 556.8\text{ kN}$$
$$\theta = \tan^{-1}\left(\frac{F_v}{F_H}\right) = \tan^{-1}\left(\frac{415.6}{370.5}\right) = 48.3^{\circ}$$