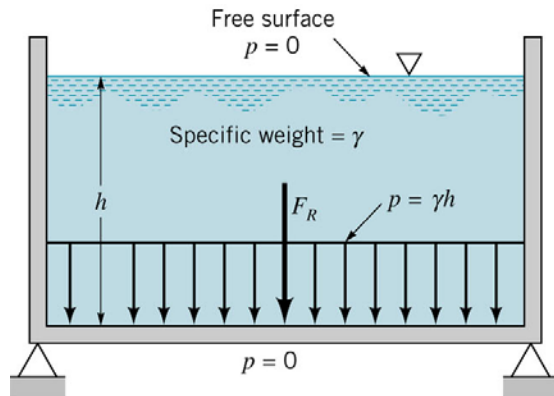
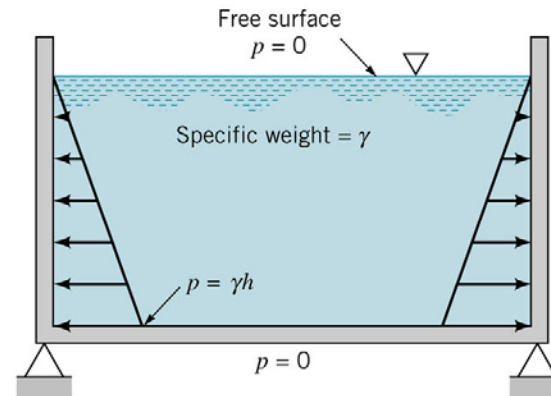


Hydrostatic force on Plane surface



(a) Pressure on tank bottom



(b) Pressure on tank ends

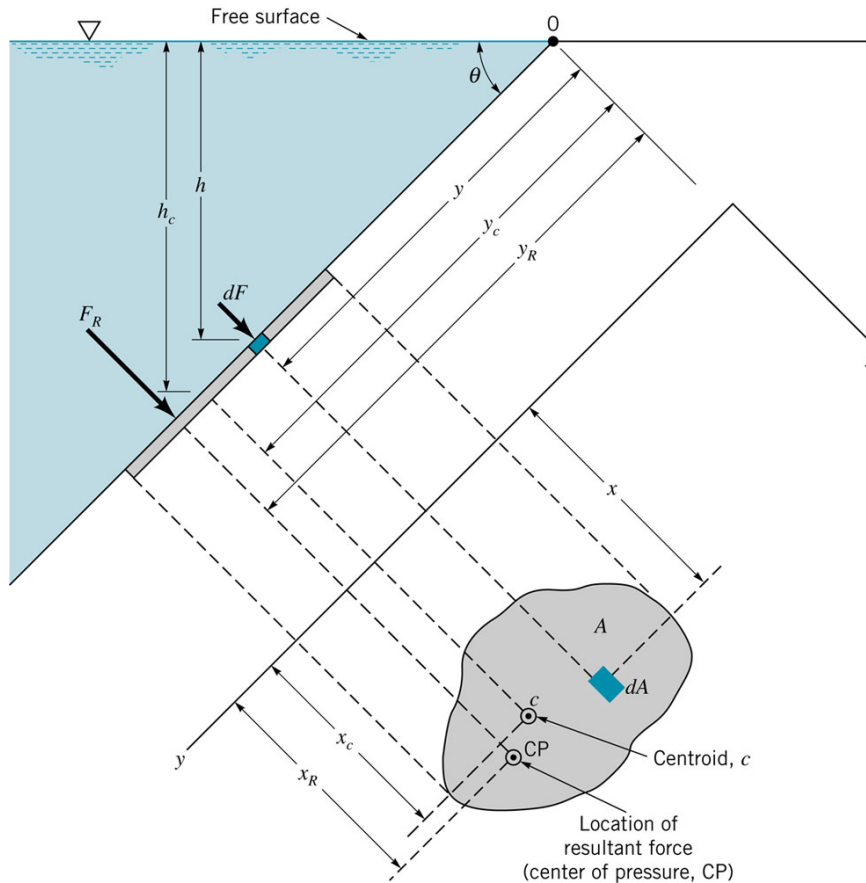
$$p = \gamma h$$

$$F_R = pA = (\gamma h)A$$

$$p(h) = \gamma h$$

$$F_R = \int_0^h p(h) dA$$

Hydrostatic force on Plane surface



$$F_R = \int_0^h p(h) dA$$

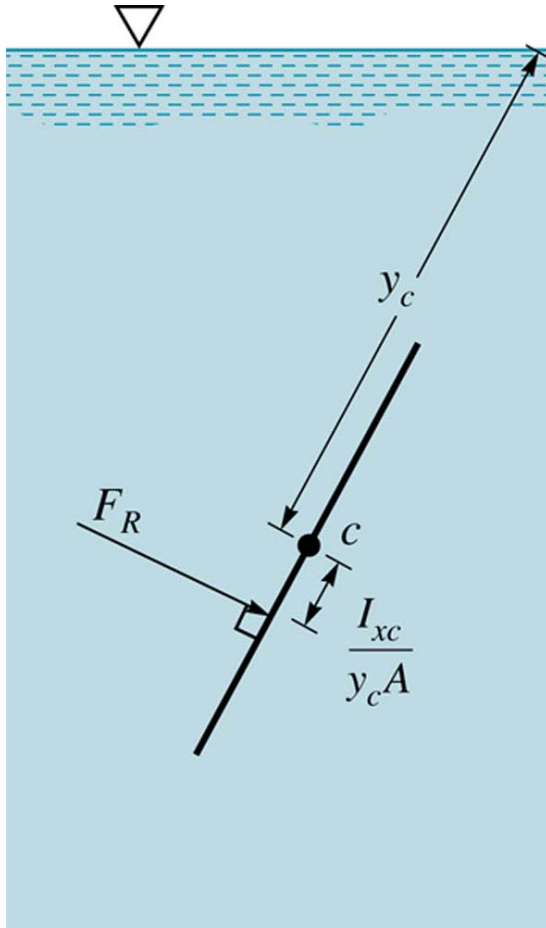
$$F_R = (\gamma h_c) A$$

Example: rectangular wall

$$F_R = \int_0^h \gamma h (\ell dh)$$

$$F_R = \left(\gamma \frac{1}{2} h \right) (\ell h)$$

Hydrostatic force on Plane surface



$$y_R F_R = \int_0^y p(y) y dA$$

$$y_R = \frac{1}{y_C A} \int_0^y y^2 dA = \frac{I_x}{y_C A}$$

Parallel axis theorem:

$$y_R = y_C + \frac{I_{x,C}}{y_C A}$$