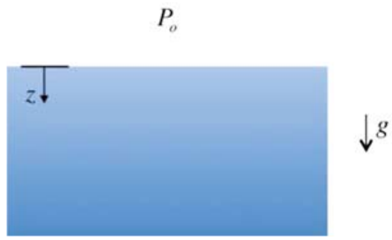
### Fluid statics

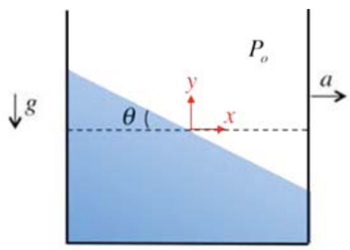



$$-\overline{\nabla}P + \rho\overline{g} = \rho\overline{a}$$

with gravity, $\overline{g} = g\hat{k}$ & no acceleration

$$P(z) = P_o + \rho g z$$

### Acceleration




with gravity, $\overline{g} = -g\hat{j}$ & an acceleration, $\overline{a} = a\hat{i}$

$$P(x,y) = -\rho a x - \rho g y + P_o$$

$$\tan\theta = \frac{a}{g}$$

### Buoyancy

$$F_B = \rho g V$$

where $\rho$ is the density of a displaced liquid, and $V$ is the volume of a displaced liquid.

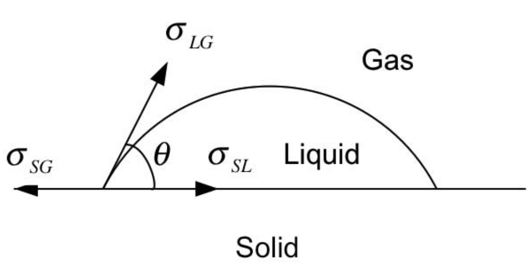
### Surface Tension

Young-Laplace equation

For a curved liquid-air interface, defined by two radii of curvature, $R_1$ & $R_2$

$$P_i - P_o = \sigma\left(\frac{1}{R_1} + \frac{1}{R_2}\right)$$

### Contact angle, $\theta$




$$\cos\theta = \frac{\sigma_{SG} - \sigma_{SL}}{\sigma_{LG}}$$