
Properties: $\tau = \mu \frac{du}{dy}$ SG = ρ/ρ_{H2O} $P_{gage} = P_{abs} - P_{atm}$

$P = \rho R_{gas} T$ P_{atm} = 101.3 kPa

$\vec{F}_{weight} = \int \rho \vec{g} dV$ $\vec{F}_{pressure} = -\int p d\vec{A}$

Hydrostatic Pressure: $p_{lower} = p_{upper} + \rho g h$ or $-\nabla p + \rho(\boldsymbol{g} - \boldsymbol{a}) = 0$

$\bar{x} = \frac{\int x p(x) dA}{\int p(x) dA}$ or $\bar{x} F_p = \int x p(x) dA$

$p = p_0 - \rho g z + \frac{1}{2} \rho r^2 \Omega^2$

Buoyancy: $F_{buoyant} = +\rho_w g V_{sub}$ $W = +\rho_o g V_{obj}$ $\rho_o/\rho_f = V_{sub}/V_{obj}$

Streamlines: $dy/dx = v/u$ $\psi = -\int v dx + f_1(y) = +\int u dy + f_2(x)$