April 3rd

Buoyancy force $F_B = m_f g = \rho_f V_f g$

$(F_{net})_y = F_B - F_G = m_f g - m_o g = \rho_f V_f g - \rho_o V_o g = \rho_f V g - \rho_o V g = (\rho_f - \rho_o) V g$

$V_f = V_o = V$ since the object is completely submerged in the field.

Energy Conservation

$W_{ext} = \Delta K + \Delta U$ → change in potential energy

Work due forces that originate outside of the system

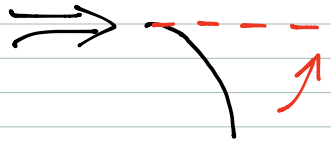
change in kinetic energy

pA = force $\quad \Delta K = \frac{1}{2} m v^2 = \frac{1}{2} (\rho V) v^2 \quad mgy = \rho V g y$

$\text{Work} = \int_i^f \vec{F} \cdot d\vec{r}$

$\frac{1}{2} \rho v^2 + \rho g y + p = \text{constant}$

Blow on a strip of paper. The paper rises



Continuity: $v_1 A_1 = v_2 A_2$