Announcements

- Quiz 5 next week (be sure to register for TAM 211 separately)

- Upcoming deadlines:
  - Tuesday (4/9): PL HW12
  - Friday (4/12): Written Assignment
Fluid Pressure
Mechanics is a branch of the physical sciences that is concerned with the state of rest or motion of bodies that are subjected to the action of forces.

**SOLIDS**

- **Rigid Bodies**
  - TAM 210/211: Statics
  - TAM 212: Dynamics

- **Deformable Bodies**
  - TAM 251: Solid Mechanics

**FLUIDS**
What Makes a Fluid or Solid?

Honey

Rock
They look like a fluid...

Cornstarch + water =

(small, hard particles)

(Mythbusters)
Fluids

**Pascal’s law**: A fluid at rest creates a pressure $p$ at a point that is the same in all directions.

**Incompressible**: An incompressible fluid is one for which the mass density is independent of the pressure $p$. Liquids are generally considered incompressible. Gases are compressible, but may be approximated as incompressible if the pressure variations are relatively small.
Observe that the pressure varies *linearly* from the free surface, and is *constant* along any horizontal plane (since $h$ is constant):

$$p = \rho gh$$
The tank is filled with water to a depth of $d = 4 \text{ m}$. Determine the resultant force the water exerts on side $A$ of the tank. ($\rho = 1000 \text{ kg/m}^3$)
Determine the magnitude and location of the resultant hydrostatic force acting on the submerged rectangular plate $AB$. The plate has width 1.5m. ($\rho_{\text{water}} = 1000 \text{ kg/m}^3$)