Body of fluid at rest

* Stress vector for a static fluid
  + Fluids will deform continuously under the application of a shear stress
  + Stress on a fluid element at rest must always act normal to the surface under consideration.
* Tetrahedron example:
  + Express areas in terms of
  + Substitute into original equation
  + Divide by and take limit to zero; / --> 0
    - N = i nx + j ny + k nz
    - 0 = i nz (pn - pz) + j ny (pn - py) + k nz (pn - pz)
  + If vector = 0, scalar components are zero
    - Px = pn
    - Py = pn
    - Pz = pn
  + Stress vector
    - t(n) = -np
    - Where n is outwardly directed unit normal
    - Minus sign represents stress on the system by surroundings
* Differential cube
  + Divide by and take limits to 0

* + iis gradient of pressure (grad p)
* Gravity vector in terms of a scalar, ɸ.
  + Gravitational potential function
  + G = igx + jgv + kgz
  + ɸ = -(xgx + ygy + zgz)
  + P = p0 + ⍴g(L-z)
  + Review
    - Linear momentum principle applied to differential volume element to develop equations of fluid statics
    - Equations solved
    - Boundary condition specified and applied to obtain expression for pressure