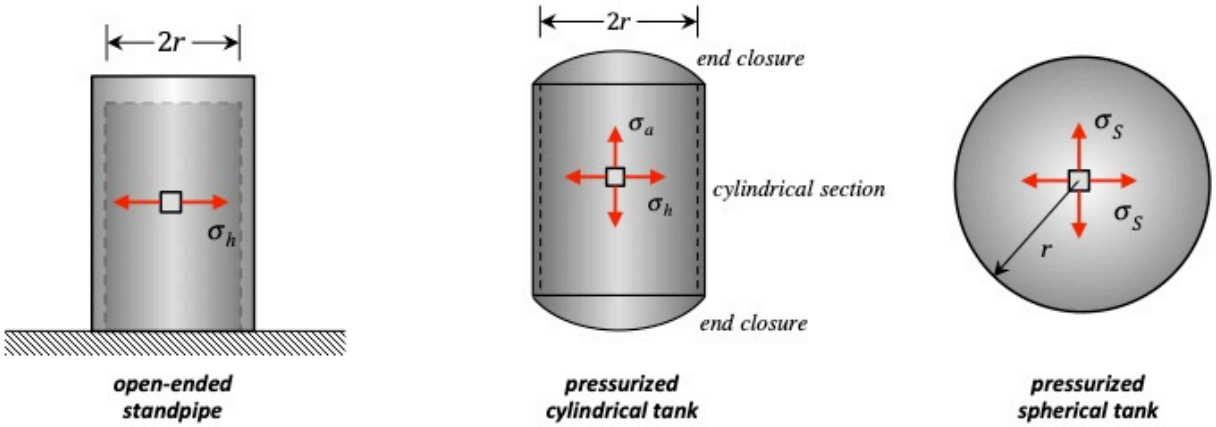
Summary: Thin-walled pressure vessels

PROBLEM: Thin-walled (wall thickness of *t*) vessel under internal pressure, *p*, due contained liquid or pressurized gas.



STRESSES

- The open-ended standpipe has only a hoop component of stress: $\sigma_h = \frac{pr}{t}$
- Pressurized cylindrical tank has both hoop and axial components of stress of:

$$\sigma_h = \frac{pr}{t}$$

$$\sigma_a = \frac{pr}{2t}$$

- The wall of the pressurized spherical tank has a uniform stress of: $\sigma_S = \frac{pr}{2t}$