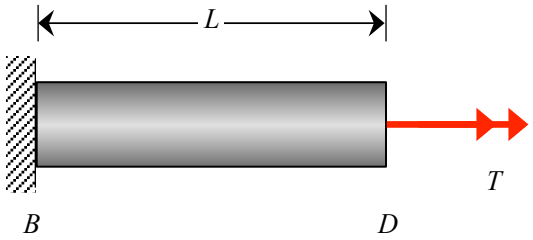
Summary: determinate shafts



Consider an axial torque T acting on a shaft with a circular cross section.

- *STRAIN*: Linear distribution across the entire cross-section.
- *STRESS*: Linear distribution across an annulus of constant material properties: $\tau = G\gamma = T\rho / I_P$
- *ANGLE OF TWIST:* $\Delta\phi = \phi_D - \phi_B = \int_0^L \frac{T}{GI_P} dx = \frac{TL}{GI_P}$