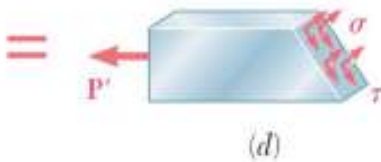
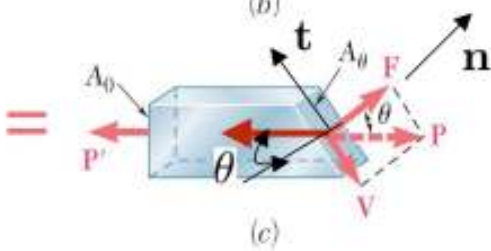
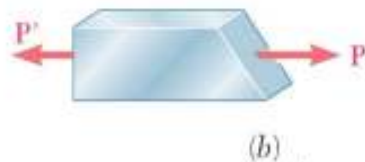
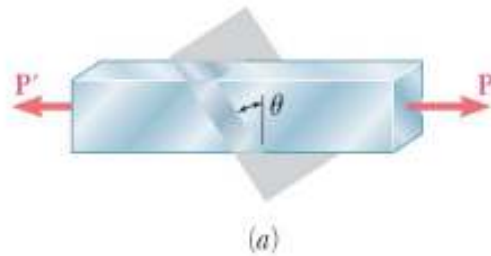


III. Stress on an Oblique Plane



- Pass a section through the member forming an angle θ with the normal plane.
- From equilibrium conditions, the distributed forces (stresses) on the plane must be equivalent to the force P .

- Resolve P into components normal and tangential to the oblique section,

$$F = P \cos \theta \quad V = P \sin \theta$$

- The average normal and shear stresses on the oblique plane are

$$\sigma = \frac{F}{A_\theta} = \frac{P \cos \theta}{A_0 / \cos \theta} = \frac{P}{A_0} \cos^2 \theta$$

$$\tau = -\frac{V}{A_\theta} = -\frac{P \sin \theta}{A_0 / \cos \theta} = -\frac{P}{A_0} \sin \theta \cos \theta$$