1) The steel water pipe has an inner diameter of 12 in. and a wall thickness of 0.25 in. If the valve $A$ is closed and the water pressure is 300 psi, determine the longitudinal and hoop stress developed in the wall of the pipe at point $B$. Draw the state of stress on a volume element located on the wall.
2) Air pressure in the cylinder is increased by exerting forces $P = 2 \text{ kN}$ on the two pistons, each having a radius of 45 mm. If the cylinder has a wall thickness of 2 mm, determine the state of stress in the wall of the cylinder.
The A-36-steel band is 2 in. wide and is secured around the smooth rigid cylinder. If the bolts are tightened so that the tension in them is 400 lb, determine the normal stress in the band, the pressure exerted on the cylinder, and the distance half the band stretches.

\[ E = 29 \times 10^6 \text{ psi} \]
\[ A = \frac{2}{8} \text{ in}^2 \]