

1. (16 pts) Please define the following terms:
 - (a) bulk modulus,
 - (b) isotropic material,
 - (c) stress concentration,
 - (d) maximum elastic moment,
 - (e) elastic section modulus,
 - (f) idealized elastoplastic material,
 - (g) shear center,
 - (h) strain rosette.

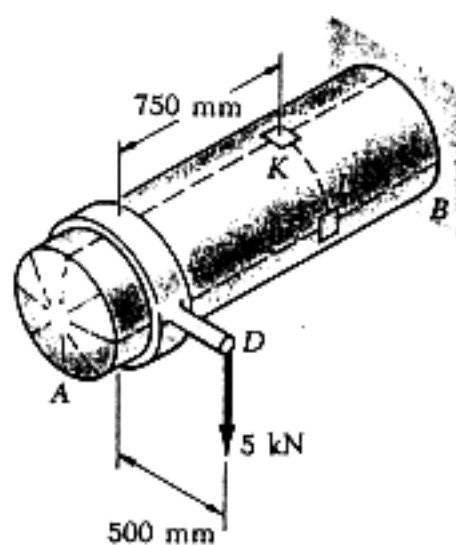
2. (10 pts) Describe the following criteria:
 - (a) Tresca yield criterion
 - (b) von Mises yield criterion.

3. (24 pts) A steel rod 0.127 in. in diameter, with a gage length of 4 in., is subjected to a gradually increasing tensile load. The load versus deformation obtained from the test is given in the following table. Construct the stress-strain diagram and determine the following: (a) the modulus of elasticity, (b) the 0.2% yield stress, (c) the ultimate stress, (d) the fracture stress, (f) the percent elongation and, (d) the modulus of resilience.

Load, F, (lb)	Deformation, δ , (in.)
250	0.0025
500	0.0050
750	0.0075
850	0.0095
950	0.0115
1050	0.0171
1100	0.0212
1150	0.0305
1200	0.0356
1150	0.0410
1100	0.0461 (fracture)

(背面仍有題目,請繼續作答)

4. (25pts) The compressed-air vessel AB has an outside diameter of 462 mm and a uniform wall thickness of 6 mm. Knowing that the gage pressure inside the vessel is 120 kPa, determine the maximum normal stress and the maximum in-plane shearing stress at point K.



5. (25pts) Determine the reaction at the roller support and draw the bending moment diagram for the beam and loading shown.

