

Homework #5

Due: 3/5/18

1. (30) Text questions 7.66 and 7.76.
2. (20) In superplastic forming it is often necessary to control the strain rate. Consider the forming of a sheet into a hemispherical dome by clamping it over a circular hole and bulging it with a pressurized fluid. (a) Using the appropriate relationships describing (1) stresses in a spherical pressure vessel and (2) stress as a function of strain rate, describe qualitatively how the gas pressure should be varied during the cycle if a constant strain rate is to be maintained in the dome. (b) Compare the levels of gas pressure needed to form hemispherical domes of 2 cm diameter and 20 cm diameter from a sheet of the same thickness at the same strain rate.
3. (30) Text questions 7.79 and 7.80.
4. (20) Text question 7.99.