

# ME 201

## Thermodynamics

### Homework #3, Due Monday, January 23, 2006

1. Convert the following temperatures to °F, °C, K, R
  - a. 98.6 °F
  - b. 298 K
  - c. 5715 °F
  - d. 460 R
  - e. 100 °C
2. Convert the following pressures to psia and kPa.
  - a. 760 mm of Hg
  - b. 101 bar
  - c.  $15.3 \times 10^6 \text{ N/m}^2$
3. What is the potential energy (in kJ) of an egg of 0.003 slugs at 50 inches above sea level?
4. What is the kinetic energy (in Btu) associated with a 300 gm hockey puck flying at 120 mph?
5. What is the density ( $\text{kg/m}^3$ ) of a material of mass  $2 \text{ lb}_m$  occupying a volume of dimensions 20 cm by 45 in by 2 feet?
6. Determine the pressure (in psia) when a 100 N force is exerted over  $5 \text{ in}^2$ .