ME 201
Thermodynamics

Homework #8 Due Wednesday, 2/15/06

1. Ten grams of water at 15°C and 100 kPa completely fills a balloon. The balloon is then heated on the stove top at constant pressure until the temperature reaches 125°C. Determine the boundary work in kJ involved in this process. What is the boundary power, if the process takes 700 seconds?

2. A piston-cylinder device of volume 0.05 ft^3 contains 0.001 lb_m H_2 at 40 psia. The device undergoes a polytropic process with polytropic exponent 0.75 or

$$PV^{0.75} = \text{constant}$$

which increases the pressure to 110 psia.. Determine

(a) the boundary work in Btu for this process
(b) the final temperature