Business

- Professional program application due April15
- Handout: L3 exam booklet
- ChE Dept. Scholarship applications due June 15
  - Based on need, academic record, and service
  - Up to half tuition available
- Spring and Fall TA positions available (apply online through ChE web page)
  - Job opportunities → ChE part-time jobs

Business (cont.)

- Homework hints on web page for rest of semester
- Special Problem 11 is on the web page, but is to write a problem and solution for Exam 3
- Table of heat capacity coefficients on web page
  - http://www.et.byu.edu/~tom/classes/273/273.html

Last but not least…

- Counting today
  - 5 more class periods, including
    - 3 classes on Energy balances
    - 1 class on transient balances
    - Review for Exam 3… then Exam 3
  - Case Study (Ch. 14 problems)
  - Review for Final Exam
  - Final Exam

The End is Near!!

Goals Today

1. Energy Balance with ΔH_r^0 (single rxn)
2. Energy Balance with ΔH_r^0 (multiple rxns)

Board Problem

$A \rightarrow bB$

Caution on Enthalpy Tables

Find $\hat{H}_{H2O,liq}$ at 25°C and 1 atm

1. Use steam tables (Table B.5)
   (105.8 kJ/kg)(kg/1000 g)(18g/mol) = 188.6 kJ/mol
2. Use ΔH_f^0
   Table B.1 says ΔH_f^0 = -285.84 kJ/mol at 25°C and 1 atm

What about VdP term since reference for steam tables is at 0.0317 bar?

$V\Delta P$ = (0.00101 m^3/kg)[1 atm - .0317 bar(atm/1.01325bar)](1.01325e5 N/m^2/atm)
= (99.1 N-m/kg)(kg/1000 g)(18 g/mol)(J/N-m)(kJ/1000J)
= 1.78e-3 kJ/mol

Look at Table B.7

- How Does $\hat{H}$ change with pressure at 50°C?
  - 0.5 bar → 209.3 kJ/kg
  - 1.0 bar → 209.3 kJ/kg
  - 5.0 bar → 209.7 kJ/kg
- Pretty small change!!