

## Summary: Second Midterm Exam (10 November 2005)

### *What you should know or be able to do...*

- 1) Calculate partial derivatives and complete differentials.
- 2) Integrate simple polynomials and exponential functions.
- 3) Calculate quasi-static work and heat ( $\delta Q$  and  $\delta W$ ) associated with different types of processes (adiabatic, isochor, isobaric, isothermal or other processes, given the equation of the curve), also using tabulated thermodynamic data.
- 4) Calculate the efficiency of a heat engine or a refrigerator.
- 5) Work with molar quantities ( $u, s, v$ ).
- 6) Use Maxwell relations.
- 7) Apply and understand measurable quantities.
- 8) Apply the Clapeyron- and the Clausius–Clapeyron-equations, both the integrated and the differential forms.
- 9) Understand  $P$ – $T$ ,  $P$ – $V$  and  $T$ – $S$  phase diagrams.
- 10) Apply formal relations.