

MIT Course 3.00 Fall 2002

Recitation #2

1. We will review the last two class lectures.

- Thermodynamics : bearings

continuum/statistical; equilibrium/nonequilibrium, time independence, relevance to measurable quantities, thermodynamic variables (very brief).

- Thermodynamic systems:

Thermodynamic state, state/path variables, state functions, equations of state.

- Extensive, intensive, derived, conjugate canonical variables.
- Zeroth law, definition of temperature
- Work, heat, heat/work equivalence
- Sign conventions : work done, heat flow.

2. Questions.

3. Is work a state function?

4. What is the average power production (in watts) of a person who burns 2500 kcal of food a day? Estimate the average additional power production of 75kg person who is climbing a mountain at a rate of 20m/min.

5. Is academic pressure in MIT an intensive quantity or extensive quantity? what is its conjugate variable? :-)

6. What is the amount of work that must be done on 1 cubic cm of water to convert into uniform spray having spherical droplets which are $5 \mu\text{m}$ in radius. (surface tension of water 0.073 N/m).