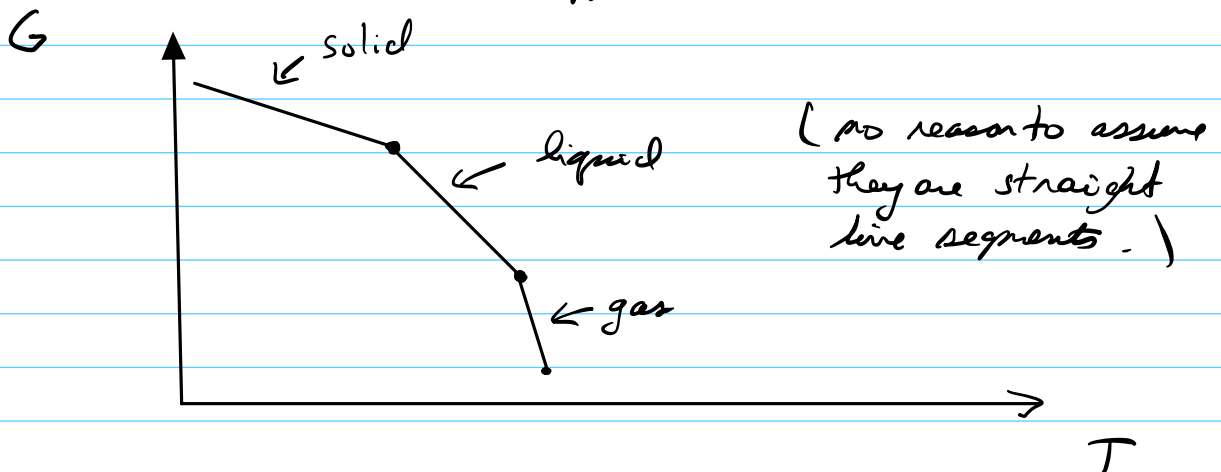


Phys 335: Problem 5.9

Problem 5.9. Sketch a qualitatively accurate graph of G vs. T for a pure substance as it changes from solid to liquid to gas at fixed pressure. Think carefully about the slope of the graph. Mark the points of the phase transformations and discuss the features of the graph briefly.

Problem 5.9 Graph G vs T for fixed p, N .

Note $S = - \left. \frac{\partial G}{\partial T} \right)_{p, N}$



Start: Low temperature, solid. Entropy is low, so slope is small, but negative

Liquid: Entropy increases with phase change so slope gets steeper.

How do we know this?

- 1) Latent heat $Q = m l$, $Q = T \Delta S$.
- 2) intuition: liquid is more disordered.