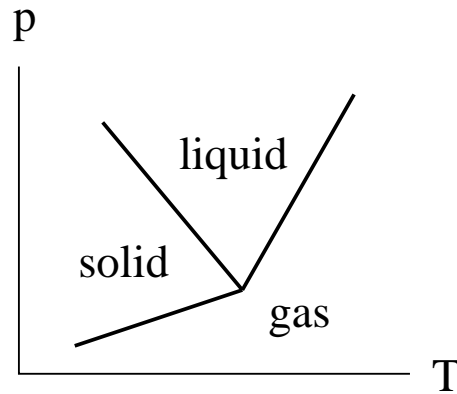


[tex54] Abnormal phase behavior

The figure shows the two-phase coexistence lines near the triple point of a hypothetical substance. Under the reasonable assumption that the densities of the liquid and solid phases are similar and much larger than the density of the gas phase, this phase diagram implies a material property that is abnormal under the circumstance described.

Show that in this substance the solid phase near the triple point has a higher entropy than the liquid phase. Melting the substance along a specific path thus releases heat. A somewhat related exotic property is actually observed in ^3He (see [tsl14]).



Solution: