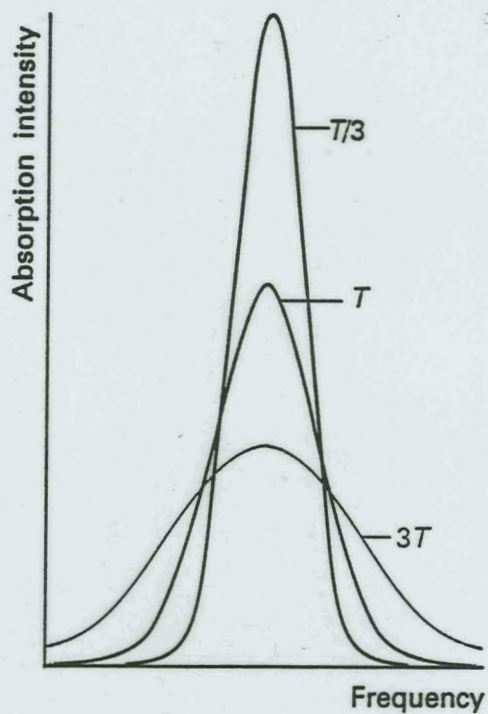


Figure 1.16 Speed distributions. (a) The distribution of speeds for several gases at 300 K. At a given temperature, the lighter molecules are moving faster. (b) The distribution of speeds for nitrogen at various temperatures. All speeds are found at all temperatures, but at the higher temperature more molecules will be found to be traveling at the faster speeds.



16.13 The shape of a Doppler-broadened spectral line reflects the Maxwell distribution of speeds in the sample at the temperature of the experiment. Notice that the line broadens as the temperature is increased.