[tex65] **Isotope separation via diffusion**

A vessel is divided into two compartments by a thin wall with many holes. The chamber on the left contains a dilute gas mixture of two isotopes (masses m_A, m_B; particle densities n_A, n_B) of some atom. As the gas diffuses into the chamber on the right, it is evacuated immediately by a pump into the left chamber of an identical vessel.

(a) Find the ratio of the numbers of type B and type A particles that are pumped out of the first vessel.

(b) Consider a battery of 20 vessels and pumps connected in series. If $n_A = n_B$ in the left chamber of the first vessel and if $m_A/m_B = 0.8$, find n'_A/n'_B of the gas when it is pumped into a container by the last pump.