[tex62] Ideal gas atoms escaping from a container I

A large vessel of volume V contains N atoms of a classical ideal gas in thermal equilibrium at temperature T.
(a) Find the rate dN/dt at which the number of particles in the vessel decreases as atoms escape into the vacuum through a tiny hole of area A in a wall.
(b) Find the rate dE/dt at which energy is exported by the escaping atoms.
(c) If the wall with the hole is perpendicular to the z-axis, find the distribution $f_{\rm esc}(v_x, v_y, v_z)$ for the atoms that have escaped.

Solution: