TL 5-5 (DeBroglie λ of N_2 gas)

$\langle KE \rangle = \frac{3}{2} kT$ (The statistical relationship between average kinetic energy & temperature of a gas)

$\langle KE \rangle = \left\langle \frac{p^2}{2m} \right\rangle = \left\langle \frac{h^2}{2m\lambda^2} \right\rangle$

$\langle \lambda^2 \rangle = \frac{2m \langle KE \rangle}{h^2}$)) oops

$\sqrt{\langle \lambda^2 \rangle} = \frac{\sqrt{3mkT}}{h}$)) oops

Average deBrogle λ is $\frac{h}{\sqrt{3mkT}}$

For room temperature, $T = 293K$, so

λ is $\boxed{2.79 \times 10^{-4} \text{ meters}}$

or 0.279 Å