

Fisika Statistika

11/03/2025

Contoh soal:

1. Persamaan gas ideal

$$PV = NkT, \text{ dengan } k = 1,38 \cdot 10^{-23} \frac{\text{J}}{\text{mol K}}$$

$$\text{Dimana: } PV = \frac{1}{3} N m \bar{v}^2$$

Energi dalam gas ideal $\bar{E} = \frac{3}{2} kT$
dalam suhu T .

Jika molekul tidak bergerak
dgn kecepatan rata² kuadrat (v^2)

Volume.

~~R.R.R.R.R~~ . $P . L . T .$

~~$dv = P \cdot l \cdot t$~~ $dv = P \cdot l \cdot t$

$= R^2 \sin \theta \, d\theta \, d\phi \, dr$

$$V = \int_0^R \int_0^\pi \int_0^{2\pi} r^2 \sin \theta \, d\theta \, d\phi \, dr$$

$$= 2\pi \int_0^R \int_0^\pi r^2 \sin \theta \, d\theta \, dr = 2\pi \frac{1}{3} R^3 \int_0^\pi \sin \theta \, d\theta$$

$$= \frac{2\pi}{3} R^3 \left[\cos \theta \right]_0^\pi$$

$$= \frac{4}{3} \pi R^3$$