

1) e) δ domáci úhol - aprava

$$U = \int E g(E) \frac{dE}{e^{\frac{E-\mu}{kT}} + 1}$$

$$g(E) = \frac{2V}{(2\pi\hbar)^n} \frac{1}{s} \sum_{n=1}^{\infty} E^{\frac{n}{s}-1}$$

$$C_V = \left(\frac{\partial U}{\partial T} \right)_V$$

~~U = \int E g(E) \frac{dE}{e^{\frac{E-\mu}{kT}} + 1}~~

$$C_V = \frac{2V}{(2\pi\hbar)^n} \frac{1}{s} \sum_{n=1}^{\infty} \frac{\partial}{\partial T} \int_0^{\infty} E^{\frac{n}{s}} \frac{dE}{e^{\frac{E-\mu}{kT}} + 1}$$

$$C_V = \frac{2V}{(2\pi\hbar)^n} \frac{1}{s} \sum_{n=1}^{\infty} \int_0^{\infty} \left[\frac{\partial}{\partial T} \left(\frac{E^{\frac{n}{s}}}{e^{\frac{E-\mu}{kT}} + 1} \right) \right] E^{\frac{n}{s}} dE$$

$$C_V = \frac{2V}{(2\pi\hbar)^n} \frac{1}{s} \sum_{n=1}^{\infty} \int_0^{\infty} \frac{E^{\frac{n}{s}} dE}{\left(e^{\frac{E-\mu}{kT}} + 1 \right)^2} \cdot \frac{E-\mu}{kT^2}$$

čože ale nemôžeme jednoducho takto takto asi nie