

12. domaći úkol - oprava 2

1) a)

$$\hat{\rho} = \frac{e^{-\beta \hat{H}}}{\text{Tr} \{e^{-\beta \hat{H}}\}}$$

$$\hat{H}|n\rangle = E_n|n\rangle$$

$$E_n = \hbar \omega \left(n + \frac{1}{2}\right)$$

$$\rho(n, n') = \langle n | \hat{\rho} | n' \rangle = \frac{\langle n | e^{-\beta \hat{H}} | n' \rangle}{\text{Tr} \{e^{-\beta \hat{H}}\}} = \frac{1}{Z} e^{-\beta \hbar \omega \left(n + \frac{1}{2}\right)} \delta_{nn'}$$