Exercise 1

Verify that the normalization factor $k-$ for the wavefunction for a particle in a potential well is $\sqrt{2/a}$.

Exercise 2

Taking the density of state of silver to be of the free electron form, calculate the number of free electrons per unit volume in silver having energy between 4 eV and 4.1 eV.

(Ans. 1.36×10^{27})

Exercise 3

Obtain an expression for the free electron density of states in (i) one dimension and in (ii) two dimensions.

(Ans. (i) $(1/\pi)(m/E\hbar^2)^{1/2}$ (ii) $m/\pi\hbar^2$)

Exercise 4

Show that $f(x) + f(-x) = 1$.