Ex.1 10 Ex. 1.1
Ex.2 10 Ex. 1.3
Ex.3 10 Ex. 1.7
Ex.4 10 Ex. 1.15
Ex.5 10 Ex. 1.16
Ex.6 10 Ex. 1.18
Ex.7 10 Ex. 1.19
Ex.8 10 Prove that the photoelectric effect cannot occur with a completely free electron, i.e., one not bound to an atom.

Ex.8 10 Derive the Wien’s displacement law

\[
\lambda_{max} T = 0.2014 \frac{hc}{k_B T} \\
\text{or} \\
\nu_{max} = \frac{2.82144 k_B T}{h}
\]

(Hints: The solutions to \( x/5 + e^{-x} = 1 \) and \( x/3 + e^{-x} = 1 \) are \( x = 4.965 \) and \( x = 2.82144 \) respectively.) Explain why \( \lambda_{max} \nu_{max} \neq c \).