(3.11) (a) Use Eq. (3.21) to find an expression for the frequency \( \nu_{\text{max}} \) at which the Planck function \( B_{\nu} \) attains its maximum value. (Warning: \( \nu_{\text{max}} \neq c/\lambda_{\text{max}} \)).

(b) What is the value of \( \nu_{\text{max}} \) for the Sun?

c) Find the wavelength, \( \lambda_{\text{max}} \), of a light wave having frequency \( \nu_{\text{max}} \). In what region of the electromagnetic spectrum is this wavelength found?

\[
B_{\nu} = \frac{2h \nu^3/\epsilon^2}{e^{h \nu/\epsilon} - 1}
\]

\[
\frac{dN}{d\nu} = \frac{2h}{\epsilon^2} \frac{d}{d\nu} \nu^3 = \frac{d}{d\nu} \left( \frac{2h}{\epsilon^2} \nu^3 \right)
\]

\[
\frac{dP}{d\nu} = \frac{d}{d\nu} \left( \epsilon \nu \nu^3 - 1 \right) = \frac{d}{d\nu} \left( \frac{2h}{\epsilon^2} \nu^3 \right)
\]

\[
\frac{dN}{d\nu} = \frac{dP}{d\nu}
\]

Extraneous value, slope = 0 = \( \frac{dP}{d\nu} \) at some value for \( \nu \).