The magnetic field of light being emitted from a laser is described by

\[ B = 3.50 \times 10^{-9} \, \text{T} \cos (1.32 \times 10^7 x - 3.22 \times 10^{15} t) \]

(a) Calculate the wavelength, in nm, of this light.

\[ \lambda = \frac{2\pi}{k} = \frac{6.285}{0.00132} \approx 476 \, \text{nm} \]

If you use \( \lambda = c/f \), (-1)

(b) Find the frequency, \( f \), of this light (in Hz).

\[ f = \frac{\omega}{2\pi} = 5.12 \times 10^{14} \, \text{Hz} \]

(c) What is the average value of the Poynting vector (use the true value of \( c \)).

\[ \overline{S} = \frac{c \cdot B_0^2}{2\mu_0} = 1.46 \times 10^{-6} \, \text{W/m}^2 \]

(d) Find the velocity of this wave calculated from the function above.

\[ c = \frac{\omega}{k} = 2.000 \times 10^8 \, \text{m/s} \]

(e) \( E_0 = c B_0 = 1.05 \times 10^5 \, \text{V/m} \).

For (a), if you didn't express the unit (nm), but you give the correct result, (-1)

If you go more than three figures, (-1)

**SHOW ALL WORK!!!!!!**

**REPORT ALL NUMBERS TO THREE SIGNIFICANT FIGURES!**

Use the conversion constants and data given on the front page.