The University of British Columbia

Science 1 Physics Assignment # 9:
Electromagnetic Waves

15 Mar. 2000 — finish by 22 Mar.

Tipler Ch. **29**, problems **17, 25, 27, 31** & **37**;

and this:

The electric field associated with a plane electromagnetic wave is given by

$$E_x = 0, \quad E_y = 0 \quad \text{and} \quad E_z = E_0 \sin[k(x - ct)],$$

where $E_0 = 2.34 \times 10^{-4}$ V/m and $k = 9.72 \times 10^6$ m^{-1}.

1. Write expressions for all three components of the magnetic field associated with the wave.
2. Find the wavelength of the wave.