9.8 Show that the electromagnetic field described by

$$\mathbf{E} = E_0\hat{\mathbf{z}} \cos kx \cos ky \cos \omega t$$

$$\mathbf{B} = B_0(\hat{\mathbf{x}} \cos kx \sin ky - \hat{\mathbf{y}} \sin kx \cos ky) \sin \omega t$$

will satisfy Eqs. 16 if $E_0 = \sqrt{2}B_0$ and $\omega = \sqrt{2}ck$. This field can exist inside a square metal box, of dimension π/k in the x and y directions and arbitrary height. What does the magnetic field look like?