1. $\vec{E}_x(z,t) = E_{ox}\cos(kz-\omega t)\,\hat{i}$

$\vec{B}_y(z,t) = B_{ox}\cos(kz-\omega t)\,\hat{j}$

$k = \frac{\omega}{v} = \omega\sqrt{\mu_0\varepsilon_0}$

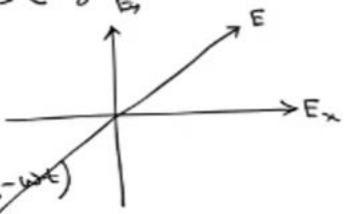
$\omega = 2\pi f$ angular frequency

2. $\vec{E}_y(z,t) = E_{oy}\cos(kz-\omega t+\varepsilon)\,\hat{j}$

$\vec{E}(z,t) = \vec{E}_x(z,t) + \vec{E}_y(z,t)$

$\varepsilon = 0 \quad \pm 2\pi n$

$\vec{E} = (E_{ox}\hat{i} + E_{oy}\hat{j})\cos(kz-\omega t)$



$\varepsilon = \pm\pi$

$\vec{E} = (E_{ox}\hat{i} - E_{oy}\hat{j})\cos(kz-\omega t)$

$\vec{E}_x(z,t) = E_{ox}\cos(kz-\omega t)\,\hat{i}$

$\vec{E}_y(z,t) = E_o\sin(kz-\omega t)\,\hat{j}$

$E_{ox} = E_{oy} = E_o$

$\varepsilon = -\frac{\pi}{2} + 2m\pi$

$m = 0, \pm 1, \pm 2, \ldots$

$\vec{E} = E_o\left[\cos(kz-\omega t)\hat{i} + \sin(kz-\omega t)\hat{j}\right]$