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Tutorial 3 - Help
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Part 1

$$\vec{D} = \epsilon \vec{E} + \eta \vec{E}$$

$$\vec{k}_n = k(\sin \theta \vec{e}_x + \cos \theta \vec{e}_y)$$

$$\vec{H}_1 = \frac{1}{z} \begin{vmatrix} -\omega \theta E_0 e^{-jk_n z} \\ 0 \\ \sin \theta E_0 e^{-jk_n z} \end{vmatrix}$$

$$\vec{E}_T = \vec{E}_1 + \vec{E}_2$$

$$= -2y E_0 \sin(k x \sin \theta) e^{-jk \cos \theta z}$$

$$\vec{H}_T = \frac{1}{z} \begin{vmatrix} -2y E_0 \sin(k x \sin \theta) e^{-jk \cos \theta z} \\ 0 \\ 2 \sin \theta E_0 \cos(k x \sin \theta) e^{-jk \cos \theta z} \end{vmatrix}$$

$$\vec{J}_S = 2 \sin \theta E_0 e^{-jk \cos \theta z} \vec{e}_y$$

Part 2

a) $k 2d \sin \theta = m \pi, m=1, 2, \dots$

b) $f_c = \frac{c}{4d}$

c) $\beta = \sqrt{\left(\frac{w}{c}\right)^2 + \left(\frac{\pi}{2d}\right)^2}$

d) $|E|$



