Örnek 1:

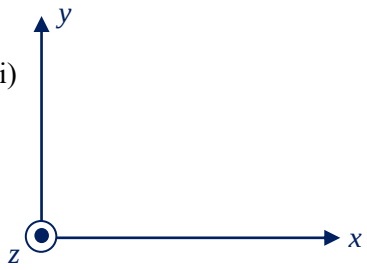
$$\bar{\mathcal{E}}(z;t) = \hat{a}_x E_0 \cos(\omega t - kz)$$

veya

$$\bar{E}(z) = \hat{a}_x E_0 e^{-jkz}$$

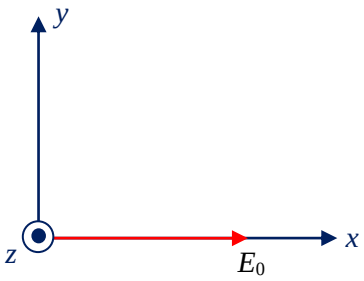
Transvers Düzlem ($z=z_0$ düzlemi)

Örneğin $z_0=0$; yani $z=0$ düzlemi

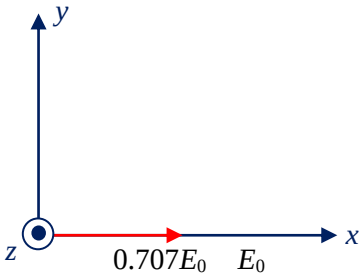


$$z = 0 \Rightarrow \bar{\mathcal{E}}(0;t) = \hat{a}_x E_0 \cos(\omega t)$$

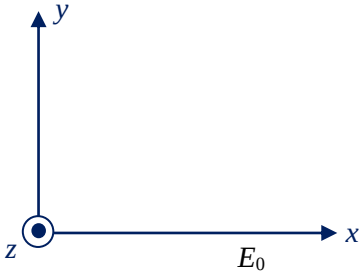
$$t = 0 \Rightarrow \omega t = 0 \Rightarrow \bar{\mathcal{E}}(0;0) = \hat{a}_x E_0 \cos(0) = \hat{a}_x E_0$$



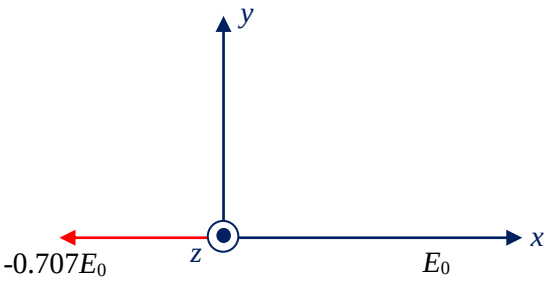
$$t = \pi/4\omega \Rightarrow \omega t = \pi/4 \Rightarrow \bar{\mathcal{E}}(0;\frac{\pi}{4}) = \hat{a}_x E_0 \cos(\frac{\pi}{4}) = \hat{a}_x E_0 \frac{\sqrt{2}}{2} = \hat{a}_x 0.707 E_0$$



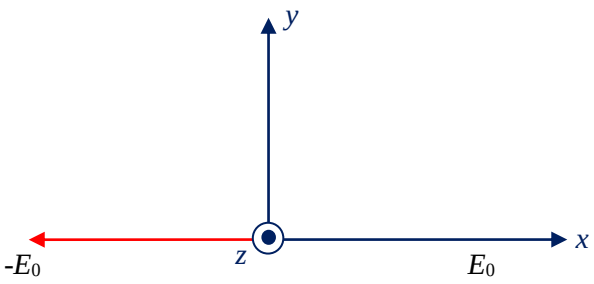
$$t = \pi/2\omega \Rightarrow \omega t = \pi/2 \Rightarrow \bar{\mathcal{E}}(0;\frac{\pi}{2}) = \hat{a}_x E_0 \cos(\frac{\pi}{2}) = 0$$



$t = 3\pi/4\omega \Rightarrow \omega t = 3\pi/4 \Rightarrow \bar{\mathscr{E}}(0;\frac{3\pi}{4}) = \hat{a}_x E_0 \cos(\frac{3\pi}{4}) = -\hat{a}_x E_0 \frac{\sqrt{2}}{2} = -\hat{a}_x 0.707 E_0$



$t = \pi/\omega \Rightarrow \omega t = \pi \Rightarrow \bar{\mathscr{E}}(0;\pi) = \hat{a}_x E_0 \cos(\pi) = -\hat{a}_x E_0$



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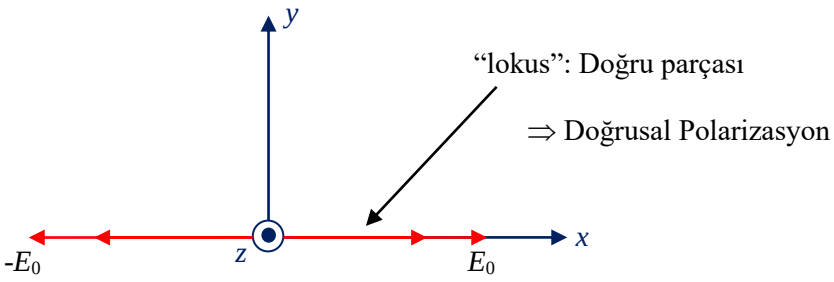


Örnek 2:

$$\bar{\mathscr{E}}(z;t) = \hat{a}_z E_0 \cos(\omega t - kz)$$

veya

$$\bar{E}(z) = \hat{a}_z E_0 e^{-jkz}$$

Örnek 3:

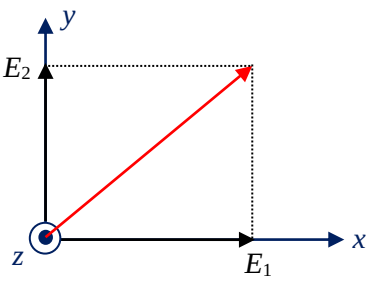
$$\bar{\mathscr{E}}(z;t) = \hat{a}_x E_1 \cos(\omega t - kz) + \hat{a}_y E_2 \cos(\omega t - kz)$$

veya

$$\bar{E}(z) = \hat{a}_x E_1 e^{-jkz} + \hat{a}_y E_2 e^{-jkz}$$

$$z = 0 \Rightarrow \bar{\mathscr{E}}(0;t) = \hat{a}_x E_1 \cos(\omega t) + \hat{a}_y E_2 \cos(\omega t)$$

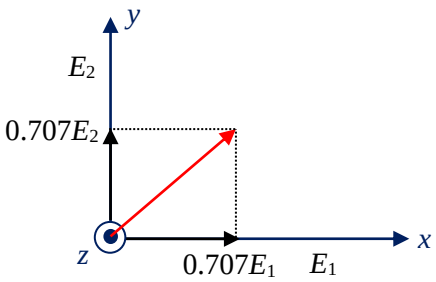
$$t = 0 \Rightarrow \omega t = 0 \Rightarrow \bar{\mathscr{E}}(0;0) = \hat{a}_x E_1 \cos(0) + \hat{a}_y E_2 \cos(0) = \hat{a}_x E_1 + \hat{a}_y E_2$$



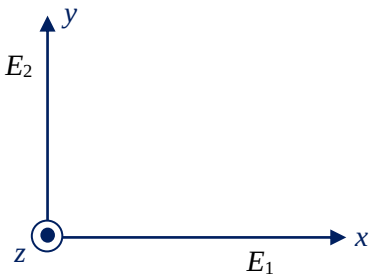
$t = \pi/4\omega \Rightarrow \omega t = \pi/4 \Rightarrow$

$$\bar{\mathscr{E}}(0;\frac{\pi}{4}) = \hat{a}_x E_1 \cos(\frac{\pi}{4}) + \hat{a}_y E_2 \cos(\frac{\pi}{4}) =$$

$$\hat{a}_x E_1 \frac{\sqrt{2}}{2} + \hat{a}_y E_2 \frac{\sqrt{2}}{2} = \hat{a}_x 0.707 E_1 + \hat{a}_y 0.707 E_2$$



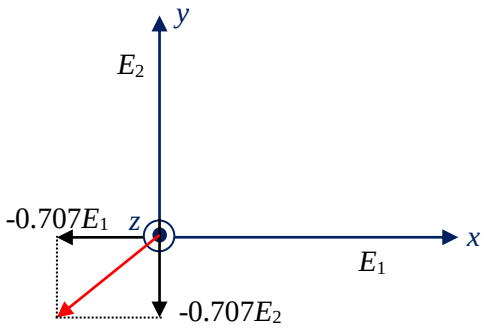
$$t = \pi/2\omega \Rightarrow \omega t = \pi/2 \Rightarrow \bar{\mathscr{E}}(0;\frac{\pi}{2}) = \hat{a}_x E_1 \cos(\frac{\pi}{2}) + \hat{a}_y E_2 \cos(\frac{\pi}{2}) = 0 + 0 = 0$$



$t = 3\pi/4\omega \Rightarrow \omega t = 3\pi/4 \Rightarrow$

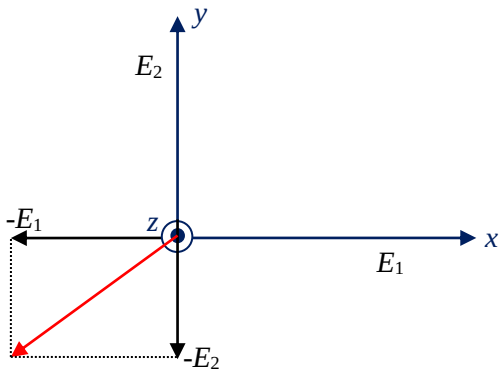
$$\bar{\mathcal{E}}(0;\frac{3\pi}{4}) = \hat{a}_x E_1 \cos(\frac{3\pi}{4}) + \hat{a}_y E_2 \cos(\frac{3\pi}{4}) =$$

$$-\hat{a}_x E_1 \frac{\sqrt{2}}{2} - \hat{a}_y E_2 \frac{\sqrt{2}}{2} = -\hat{a}_x 0.707 E_1 - \hat{a}_y 0.707 E_2$$



$t = \pi/\omega \Rightarrow \omega t = \pi \Rightarrow$

$$\bar{\mathcal{E}}(0;\pi) = \hat{a}_x E_1 \cos(\pi) + \hat{a}_y E_2 \cos(\pi) = -\hat{a}_x E_1 - \hat{a}_y E_2$$



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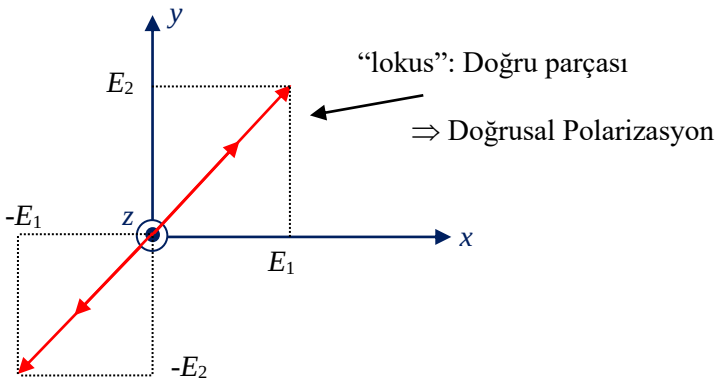


Örnek 4:

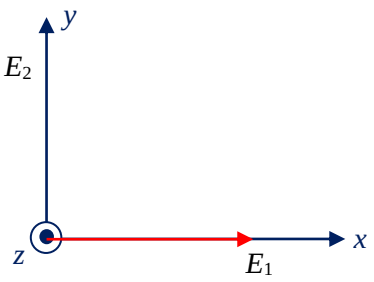
$$\bar{\mathcal{E}}(z;t) = \hat{a}_x E_1 \cos(\omega t - kz) + \hat{a}_y E_2 \cos(\omega t - kz - \frac{\pi}{2})$$
$$= \hat{a}_x E_1 \cos(\omega t - kz) + \hat{a}_y E_2 \sin(\omega t - kz)$$

veya

$$\bar{E}(z) = \hat{a}_x E_1 e^{-jkz} + \hat{a}_y E_2 e^{-jkz} e^{-j\frac{\pi}{2}}$$

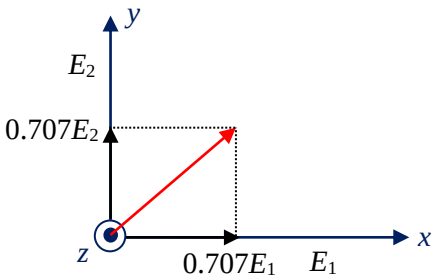
$$z = 0 \Rightarrow \bar{\mathcal{E}}(0;t) = \hat{a}_x E_1 \cos(\omega t) + \hat{a}_y E_2 \sin(\omega t)$$

$$t = 0 \Rightarrow \omega t = 0 \Rightarrow \bar{\mathcal{E}}(0;0) = \hat{a}_x E_1 \cos(0) + \hat{a}_y E_2 \sin(0) = \hat{a}_x E_1 + \hat{a}_y 0 = \hat{a}_x E_1$$

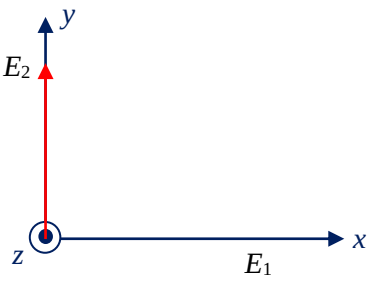


$$t = \pi/4\omega \Rightarrow \omega t = \pi/4 \Rightarrow$$

$$\bar{\mathcal{E}}(0;\frac{\pi}{4}) = \hat{a}_x E_1 \cos(\frac{\pi}{4}) + \hat{a}_y E_2 \sin(\frac{\pi}{4}) =$$
$$\hat{a}_x E_1 \frac{\sqrt{2}}{2} + \hat{a}_y E_2 \frac{\sqrt{2}}{2} = \hat{a}_x 0.707 E_1 + \hat{a}_y 0.707 E_2$$



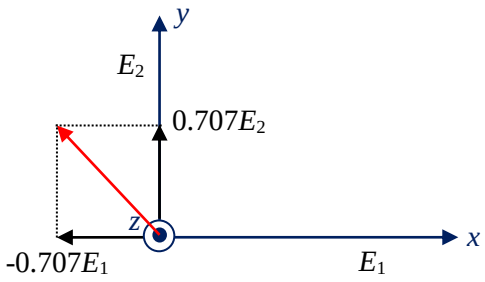
$$t = \pi/2\omega \Rightarrow \omega t = \pi/2 \Rightarrow \bar{\mathcal{E}}(0;\frac{\pi}{4}) = \hat{a}_x E_1 \cos(\frac{\pi}{2}) + \hat{a}_y E_2 \sin(\frac{\pi}{2}) = 0 + \hat{a}_y E_2 = \hat{a}_y E_2$$



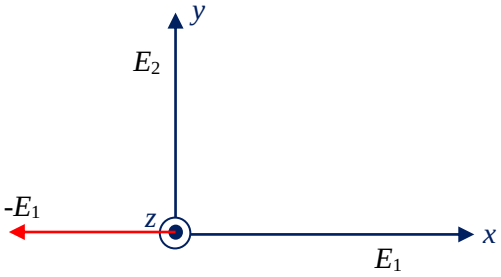
$t = 3\pi/4\omega \Rightarrow \omega t = 3\pi/4 \Rightarrow$

$$\bar{\mathcal{E}}(0;\frac{3\pi}{4}) = \hat{a}_x E_1 \cos(\frac{3\pi}{4}) + \hat{a}_y E_2 \sin(\frac{3\pi}{4}) =$$

$$-\hat{a}_x E_1 \frac{\sqrt{2}}{2} + \hat{a}_y E_2 \frac{\sqrt{2}}{2} = -\hat{a}_x 0.707 E_1 + \hat{a}_y 0.707 E_2$$



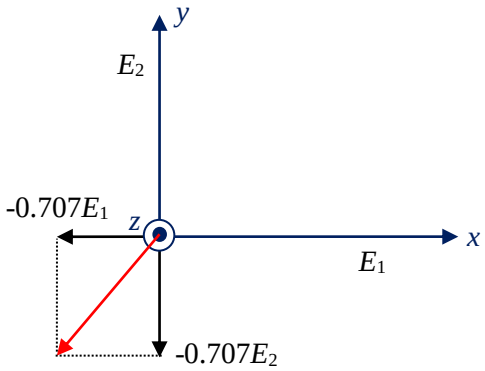
$t = \pi/\omega \Rightarrow \omega t = \pi \Rightarrow \bar{\mathcal{E}}(0;\pi) = \hat{a}_x E_1 \cos(\pi) + \hat{a}_y E_2 \sin(\pi) = -\hat{a}_x E_1$



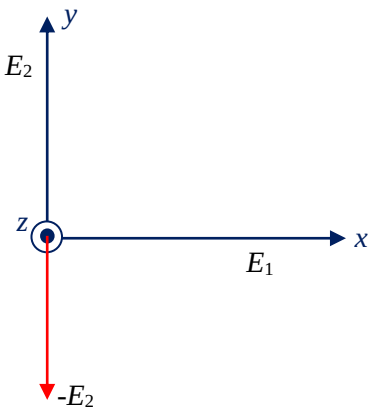
$t = 5\pi/4\omega \Rightarrow \omega t = 5\pi/4 \Rightarrow$

$$\bar{\mathcal{E}}(0;\frac{5\pi}{4}) = \hat{a}_x E_1 \cos(\frac{5\pi}{4}) + \hat{a}_y E_2 \sin(\frac{5\pi}{4}) =$$

$$-\hat{a}_x E_1 \frac{\sqrt{2}}{2} - \hat{a}_y E_2 \frac{\sqrt{2}}{2} = -\hat{a}_x 0.707 E_1 - \hat{a}_y 0.707 E_2$$



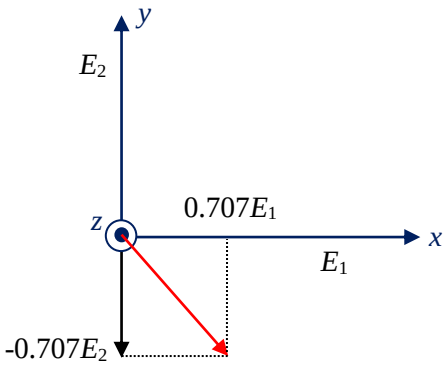
$t = 3\pi/2\omega \Rightarrow \omega t = 3\pi/2 \Rightarrow \bar{\mathcal{E}}(0;\frac{3\pi}{2}) = \hat{a}_x E_1 \cos(\frac{3\pi}{2}) + \hat{a}_y E_2 \sin(\frac{3\pi}{2}) = -\hat{a}_x E_1$



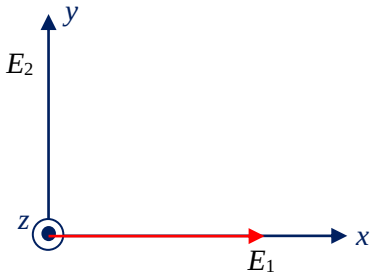
$t = 7\pi/4\omega \Rightarrow \omega t = 7\pi/4 \Rightarrow$

$$\bar{\mathcal{E}}(0;\frac{7\pi}{4}) = \hat{a}_x E_1 \cos(\frac{7\pi}{4}) + \hat{a}_y E_2 \sin(\frac{7\pi}{4}) =$$

$$\hat{a}_x E_1 \frac{\sqrt{2}}{2} - \hat{a}_y E_2 \frac{\sqrt{2}}{2} = \hat{a}_x 0.707 E_1 - \hat{a}_y 0.707 E_2$$



$t = 2\pi \Rightarrow \omega t = 2\pi \Rightarrow \quad \bar{\mathcal{E}}(0;2\pi) = \hat{a}_x E_1 \cos(2\pi) + \hat{a}_y E_2 \sin(2\pi) = \hat{a}_x E_1$



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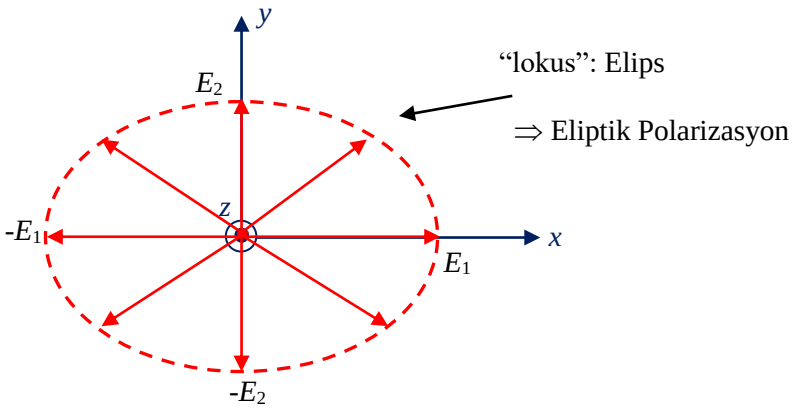

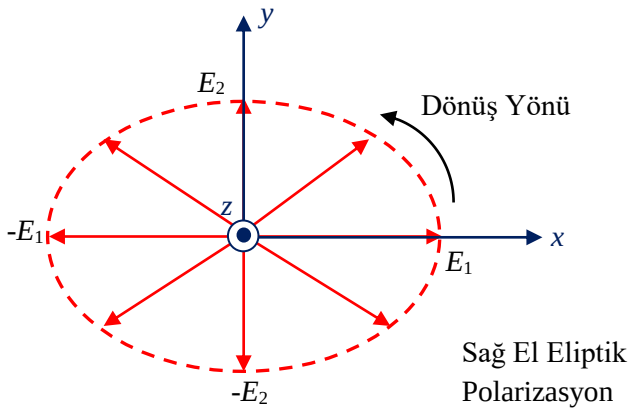

Örnek 5:

$$\overline{\mathcal{E}}(z;t) = \hat{a}_x E_1 \cos(\omega t - kz) - \hat{a}_y E_2 \sin(\omega t - kz)$$

veya

$$\overline{E}(z) = \hat{a}_x E_1 e^{-jkz} - \hat{a}_y E_2 e^{-jkz} e^{-j\frac{\pi}{2}}$$