

32.8

Datos

$$\lambda = 435 \text{ nm}$$

$$E_{\text{max}} = 2.7 \cdot 10^{-3} \text{ V/m}$$

f - s

~~2.7 V/m~~ $E(z, t)$ $B(z, t)$

Como es una onda electromagnética su
velocidad de propagación es $c = 3 \cdot 10^8 \text{ m/s}$

$$\text{como } c = \lambda f$$

$$f = \frac{c}{\lambda} = \frac{3 \cdot 10^8}{435 \cdot 10^{-9}} = 6.9 \cdot 10^{14} \text{ Hz}$$

Aplicando $E_{\text{max}} = c B_{\text{max}}$

$$\frac{E_{\text{max}}}{c} = B_{\text{max}}$$

$$\frac{2.7 \cdot 10^{-3}}{3 \cdot 10^8} = B_{\text{max}}$$

$$B_{\text{max}} = 9 \cdot 10^{-12} \text{ T}$$

$$k = \frac{2\pi}{\lambda} = \frac{2(3.14)}{435 \cdot 10^{-9}} = 1.44 \cdot 10^7 \text{ rad/m}$$

$$\omega = 2\pi f = 2(3.14)(6.9 \cdot 10^{14}) = 4.34 \cdot 10^{15} \text{ rad/s}$$

$$\vec{E}(z, t) = \hat{i} E_{\text{max}} \cos(kz + \omega t)$$

$$\vec{B}(z, t) = -\hat{j} B_{\text{max}} \cos(kz + \omega t).$$