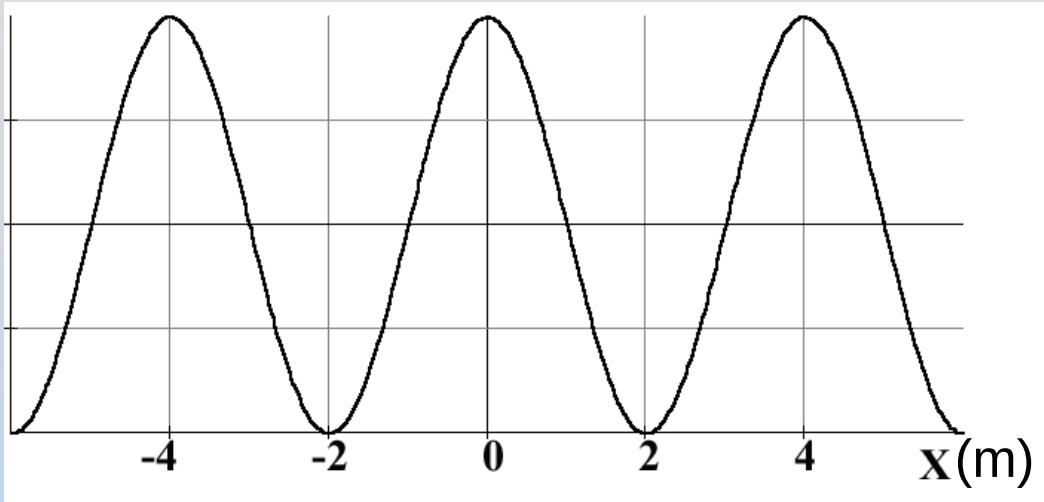
Concept Question: Wave

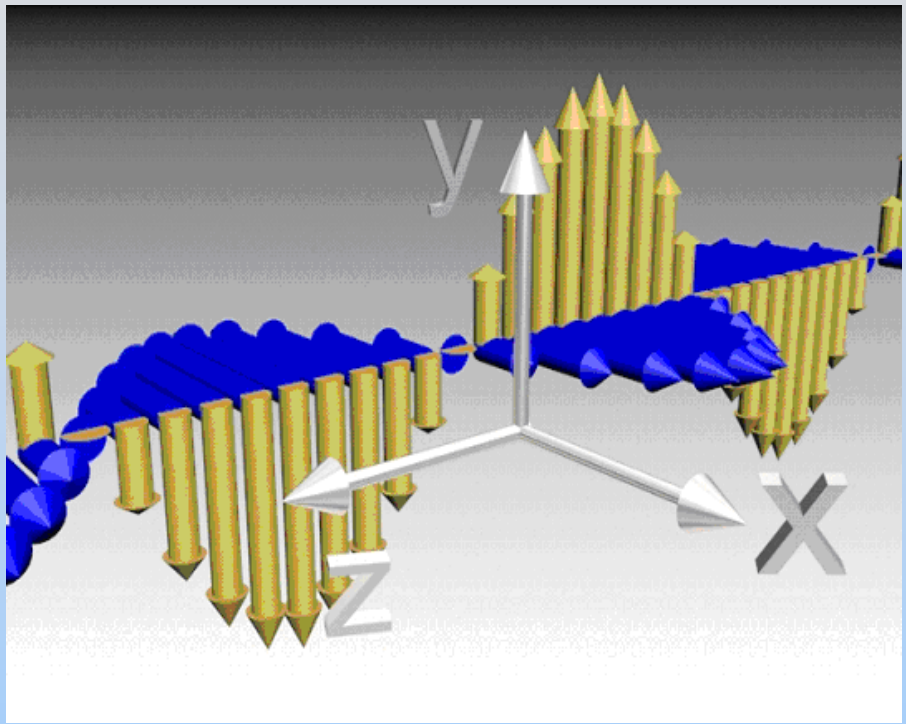


The graph shows a plot of the function $y = \cos(k\,x)$. The value of k is

1. ½ m^{-1}
2. ¼ m^{-1}
3. π m^{-1}
4. $\pi/2$ m^{-1}
5. I don't know

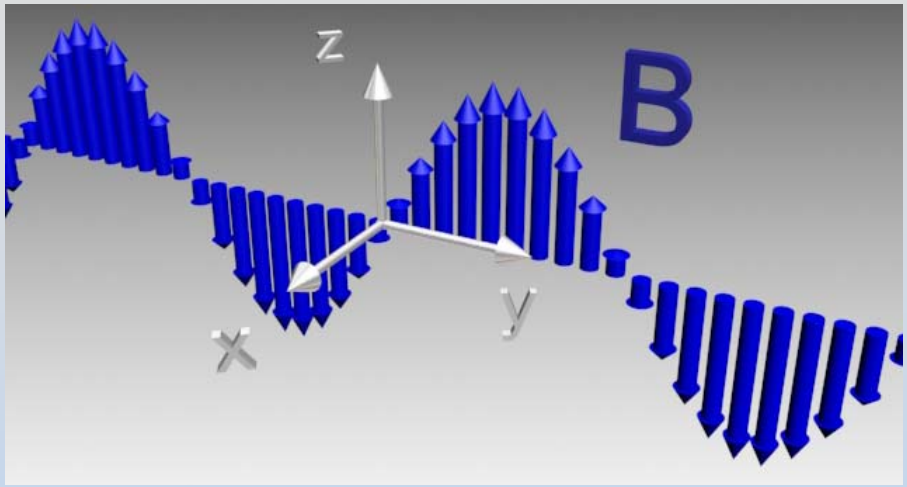
Concept Question: Direction of Propagation

The figure shows the E (yellow) and B (blue) fields of a plane wave. This wave is propagating in the



1. +x direction
2. –x direction
3. +z direction
4. –z direction
5. I don't know

Concept Question: Traveling Wave



The B field of a plane EM wave is $\vec{\mathbf{B}}(z,t) = \hat{\mathbf{k}} B_0 \sin(ky - \omega t)$

The electric field of this wave is given by

1. $\vec{\mathbf{E}}(z,t) = \hat{\mathbf{j}} E_0 \sin(ky - \omega t)$
2. $\vec{\mathbf{E}}(z,t) = -\hat{\mathbf{j}} E_0 \sin(ky - \omega t)$
3. $\vec{\mathbf{E}}(z,t) = \hat{\mathbf{i}} E_0 \sin(ky - \omega t)$
4. $\vec{\mathbf{E}}(z,t) = -\hat{\mathbf{i}} E_0 \sin(ky - \omega t)$
5. I don't know

Concept Question EM Wave

The E field of a plane wave is:

$$\vec{\mathbf{E}}(z,t) = \hat{\mathbf{j}} E_0 \sin(kz + \omega t)$$

The magnetic field of this wave is given by:

1. $\vec{\mathbf{B}}(z,t) = \hat{\mathbf{i}} B_0 \sin(kz + \omega t)$
2. $\vec{\mathbf{B}}(z,t) = -\hat{\mathbf{i}} B_0 \sin(kz + \omega t)$
3. $\vec{\mathbf{B}}(z,t) = \hat{\mathbf{k}} B_0 \sin(kz + \omega t)$
4. $\vec{\mathbf{B}}(z,t) = -\hat{\mathbf{k}} B_0 \sin(kz + \omega t)$
5. I don't know

8.02SC Physics II: Electricity and Magnetism

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