HW due 7/13

Due: 7:00am on Wednesday, July 13, 2016

To understand how points are awarded, read the Grading Policy for this assignment.

Exercise 32.4

Consider each of the electric- and magnetic-field orientations.

Part A

What is the direction of propagation of the wave if $\vec{E} = E\hat{i}, \vec{B} = -B\hat{j}$.

Express the direction of the propagation vector, $\vec{P}$, as a unit vector. Its three components should be entered in order (x,y,z) separated by commas. For example, if the wave propagates only in the *-x* direction, enter `-1,0,0`.

ANSWER:

0,0,-1

Correct

Part B

What is the direction of propagation of the wave if $\vec{E} = E\hat{j}, \vec{B} = B\hat{i}$.

Express the direction of the propagation vector, $\vec{P}$, as a unit vector. Its three components should be entered in order (x,y,z) separated by commas. For example, if the wave propagates only in the *-x* direction, enter `-1,0,0`.

ANSWER:

0,0,-1

Correct

Part C

What is the direction of propagation of the wave if $\vec{E} = -E\hat{k}, \vec{B} = -B\hat{i}$.

Express the direction of the propagation vector, $\vec{P}$, as a unit vector. Its three components should be entered in order (x,y,z) separated by commas. For example, if the wave propagates only in the *-x* direction, enter `-1,0,0`.

ANSWER:

0,1,0

Correct

Part D

What is the direction of propagation of the wave if $\vec{E} = E\hat{i}, \vec{B} = -B\hat{k}$.

Express the direction of the propagation vector, $\vec{P}$, as a unit vector. Its three components should be entered in order (x,y,z) separated by commas. For example, if the wave propagates only in the *-x* direction, enter `-1,0,0`.

ANSWER:

0,1,0

Correct

Exercise 32.18

A sinusoidal electromagnetic wave from a radio station passes perpendicularly through an open window that has area of 0.500 m^2 . At the window, the electric field of the wave has an rms value 0.0300 $\mathrm{V/m}$.

Part A

How much energy does this wave carry through the window during a 30.0-s commercial?

Express your answer with the appropriate units.

ANSWER:

U = 3.58×10^{-5} J

Correct

Score Summary:

Your score on this assignment is 100%.
You received 10 out of a possible total of 10 points.