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PHYS 1260, section 001, Fall 2020

Chapter 21 (Homework)

INSTRUCTOR

Joel DeWitt

East Carolina University

Current Score

QUESTION	1	2	3	4	5	6	7	TOTAL SCORE	
POINTS	-1/2	-1/1	-1/2	-1/2	-1/3	-1/8	-1/8		
								-1/26	0.0%

Due Date

THU, OCT 22, 2020

11:59 PM EDT

Request Extension

Description

▼

Assignment Submission & Scoring

Assignment Submission

For this assignment, you submit answers by question parts. The

number of submissions remaining for each question part only changes if you submit or change the answer.

Assignment Scoring

Your last submission is used for your score.

1. [-/2 Points]

DETAILS

COLFUNPHYS1 21.P.005.

MY NOTES

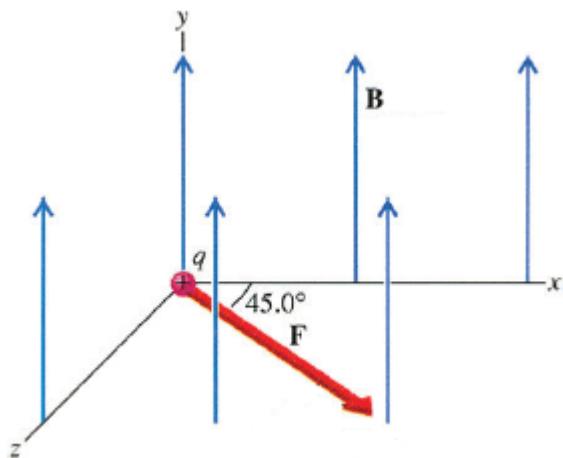
ASK YOUR TEACHER

PRACTICE ANOTHER

Find the direction and magnitude of the minimum velocity of charge $q = +2e$ that will produce the magnetic force $\mathbf{F}$ shown in the figure below. (Measure the angle counterclockwise from the x axis in the xz plane. Take the magnitudes of $\mathbf{F}$ as 1.99×10^{-11} N and the magnitude of $\mathbf{B}$ as 2.20 T.)

magnitude

direction



2. [-/1 Points]

DETAILS

COLFUNPHYS1 21.P.008.

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

The magnetic field near the surface of a neutron star has a magnitude of 1.00×10^8 T. Find the acceleration of an electron near the star moving at 1.05×10^7 m/s if both $\mathbf{v}$ and $\mathbf{B}$ are in the same plane, with $\mathbf{B}$ directed to the right and $\mathbf{v}$ directed 31.7° above $\mathbf{B}$.
 magnitude of the acceleration =

3. [-/2 Points] DETAILS COLFUNPHYS1 21.P.009.

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

The earth's magnetic field can affect the electron beam in an oscilloscope or a television tube. An electron that has been accelerated through a potential difference of 4.53×10^4 V has a horizontal initial velocity, directed north. Find the magnetic force on the electron when the earth's field has a horizontal component of 0.250 G and dips 60.0° below the horizontal (values typical in California).

magnitude

direction

4. [-/2 Points] DETAILS COLFUNPHYS1 21.P.021.

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

A proton is initially moving west at a speed of 1.08×10^6 m/s in a uniform magnetic field of magnitude 0.292 T directed vertically upward. Describe in detail the proton's trajectory, including its shape and orientation.

the radius of the path

the proton's trajectory

5. [-/3 Points] DETAILS COLFUNPHYS1 21.P.022.

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

An electron with a kinetic energy of 1.05×10^4 eV is initially moving south in a uniform magnetic field of magnitude 490 G, directed east. Describe in detail the electron's trajectory, including its shape and orientation.

the radius of the path

direction of initial force shape of trajectory

6. [-/8 Points]

DETAILS

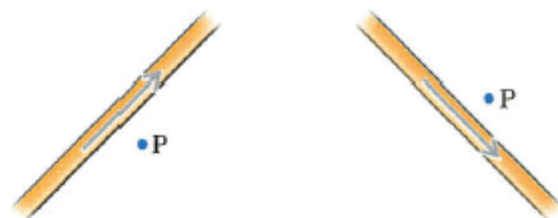
COLFUNPHYS1 21.P.029.

MY NOTES

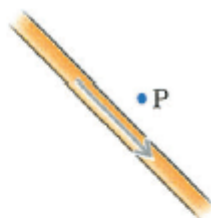
ASK YOUR TEACHER

PRACTICE ANOTHER

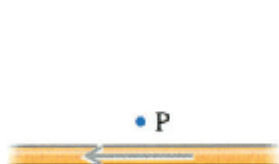
Each of the wires in the figure below carries a current of 3.07 A in the directions indicated. For each wire, find the magnitude and direction of the magnetic field at a point P that is 1.03 cm from the wire.



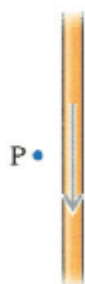
(a)



(b)



(c)



(d)

(a)

magnitude direction

(b)

magnitude direction

(c)

magnitude direction

(d)

magnitude direction

7. [-/8 Points]

DETAILS

COLFUNPHYS1 21.P.030.

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

A long, straight wire perpendicular to this page carries a current of 4.88 A directed into the page. Find the magnetic field at the following points, all 10.1 cm from the wire.

(a) 10.1 cm to the left of the wire

magnitude direction

(b) 10.1 cm directly below the wire

magnitude direction

(c) 10.1 cm to the right of the wire

magnitude direction

(d) 10.1 cm directly above the wire

magnitude direction

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