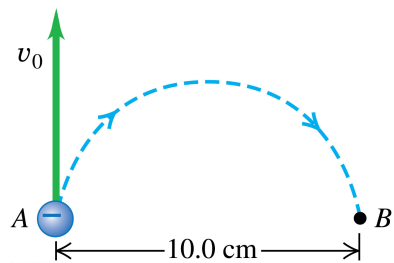


PY212

**Discussion Worksheet 6**

Please work with your partners on the following exercises.

- 1) An electron at point A has a speed  $v_0$  of  $1.41 \times 10^6$  m/s.



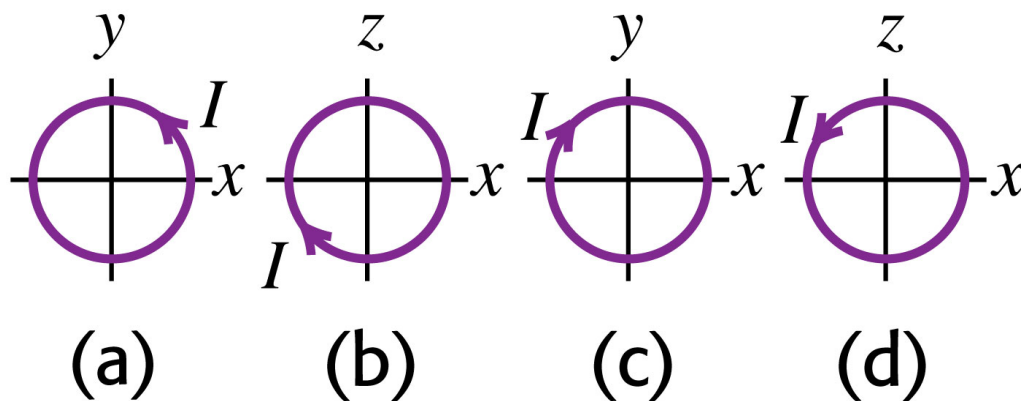
- a) Find the magnitude and direction of the magnetic field that will cause the electron to follow the semi-circular path from A to B.

- b) Find the time required for the electron to move from A to B.

Name \_\_\_\_\_ Disc \_\_\_\_\_

2) An electron in the beam of a TV picture tube is accelerated by a potential difference of 2.00 kV. Then it passes through a region of transverse magnetic field, where it moves in a circular arc with radius 0.180m. What is the magnitude of the field ?

3) A circular coil with area  $A$  and  $N$  turns is free to rotate about a diameter that coincides with the  $x$ -axis. Current  $I$  is circulating in the coil. There is a uniform magnetic field  $\vec{B}$  in the positive  $y$ -direction.



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- (i) Calculate the magnitude and direction of the torque  $\vec{\tau}$ .
- (ii) Calculate the value of the potential energy when the coil is oriented as shown in part

(a)

(b)

Name \_\_\_\_\_ Disc \_\_\_\_\_

(c)

(d)