

Solutions

Each answer shows the steps, then the **result**.

2.1

- $F = qvB = (3.0 \times 10^{-6})(2.0 \times 10^4)(0.40) = 2.4 \times 10^{-2} \text{ N}$

2.2

- the force is perpendicular to the velocity, so $\vec{F} \cdot \vec{v} = 0$ and no work is done — only the direction changes

2.3

- $r = \frac{mv}{qB}$

3.1 B

3.2 C

3.3

(a)

- $F = qvB = (1.6 \times 10^{-19})(4.0 \times 10^6)(0.50) = 3.2 \times 10^{-13} \text{ N}$

(b)

- $r = \frac{mv}{qB} = \frac{(1.67 \times 10^{-27})(4.0 \times 10^6)}{(1.6 \times 10^{-19})(0.50)} = 0.084 \text{ m}$