



Ex 19.5
p 599

p^+ moving $\perp B$

$$r = 14 \text{ cm} = .14 \text{ m}$$

$$B = .35 \text{ T}$$

$$v = ?$$

$$v = \frac{qBr}{m} = \frac{1.6 \times 10^{-19} (.35) (.14)}{1.67 \times 10^{-27}}$$

$$v = 4.7 \times 10^6 \frac{\text{m}}{\text{s}}$$

Motion of charged particle
in a B
 F_m to center - produces a centripetal
acceleration
use r.h.s. #1

F out palm
 v (or I) thumb
 B fingers centripetal $F = ma$
 $F_c = \frac{m(v^2)}{r}$ $a_c = \frac{v^2}{r}$

$$F_m = qvB$$

$$F_m = F_c$$

$$qvB = \frac{mv^2}{r}$$

In this
type problem

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

Solved for v

$$v = \frac{qBr}{m}$$

do # 30

#30 $E = 950 \frac{\text{V}}{\text{m}}$ $B = 0.93 \text{ T}$

$$r = ?$$

$$m = 2.18 \times 10^{-26} \text{ kg}$$

$$F_e = qE$$

$$F_e = qvB = qE$$

$$qvB = qE$$

$$v = \frac{E}{B}$$

$$qvB = \frac{mv^2}{r}$$

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

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