

75. (a) We use Eq. 29-16 to calculate r :

$$r = \frac{m_e v}{qB} = \frac{(9.11 \times 10^{-31} \text{ kg})(0.10)(3.00 \times 10^8 \text{ m/s})}{(1.60 \times 10^{-19} \text{ C})(0.50 \text{ T})} = 3.4 \times 10^{-4} \text{ m} .$$

(b) The kinetic energy, computed using the formula from Chapter 7, is

$$K = \frac{1}{2} m_e v^2 = \frac{(9.11 \times 10^{-31} \text{ kg})(3.0 \times 10^7 \text{ m/s})^2}{2(1.6 \times 10^{-19} \text{ J/eV})} = 2.6 \times 10^3 \text{ eV} .$$