Homework 7
Chapter 22

Problem 6. A proton moves with a velocity of $\mathbf{v} = (2\hat{\mathbf{i}} - 4\hat{\mathbf{j}} + \hat{\mathbf{k}})$ m/s in a region in which the magnetic field is $\mathbf{B} = (\hat{\mathbf{i}} + 2\hat{\mathbf{j}} - 3\hat{\mathbf{k}})$ T. What is the magnitude of the magnetic force this charge experiences?

Problem 8. An electron moves in a circular path perpendicular to a constant magnetic field of magnitude $B = 1.00$ mT. The angular momentum of the electron about the center of the circle is $L = 4.00 \cdot 10^{-25}$ Js. Determine (a) the radius of the circular path and (b) the speed of the electron.

Problem 16. A wire $l = 2.80$ m in length carries a current of $I = 5.00$ A in a region where a uniform magnetic field has a magnitude of $B = 0.390$ T. Calculate the magnitude of the magnetic force on the wire assuming that the angle between the magnetic field and the current is (a) $\theta_a = 60.0°$, (b) $\theta_b = 90.0°$, and (c) $\theta_c = 120°$.