University Physics, 13/e

Young/Freedman

Chapter 28 Key Equations

$$\vec{\boldsymbol{B}} = \frac{\mu_0}{4\pi}\frac{q\vec{\boldsymbol{v}} \times \hat{\boldsymbol{r}}}{r^2}$$ (magnetic field of a point charge with constant velocity) (28.2)

$$d\vec{\boldsymbol{B}} = \frac{\mu_0}{4\pi}\frac{I d\vec{\boldsymbol{l}} \times \hat{\boldsymbol{r}}}{r^2}$$ (magnetic field of a current element) (28.6)

$$B = \frac{\mu_0 I}{2\pi r}$$ (near a long, straight, current-carrying conductor) (28.9)

$$\frac{F}{L} = \frac{\mu_0 I I'}{2\pi r}$$ (two long, parallel, current-carrying conductors) (28.11)

$$B_x = \frac{\mu_0 I a^2}{2(x^2 + a^2)^{3/2}}$$ (on the axis of a circular loop) (28.15)

$$B_x = \frac{\mu_0 N I}{2a}$$ (at the center of N circular loops) (28.17)

$$\oint \vec{\boldsymbol{B}} \bullet d\vec{\boldsymbol{l}} = \mu_0 I_{\text{encl}}$$ (Ampere's law) (28.20)