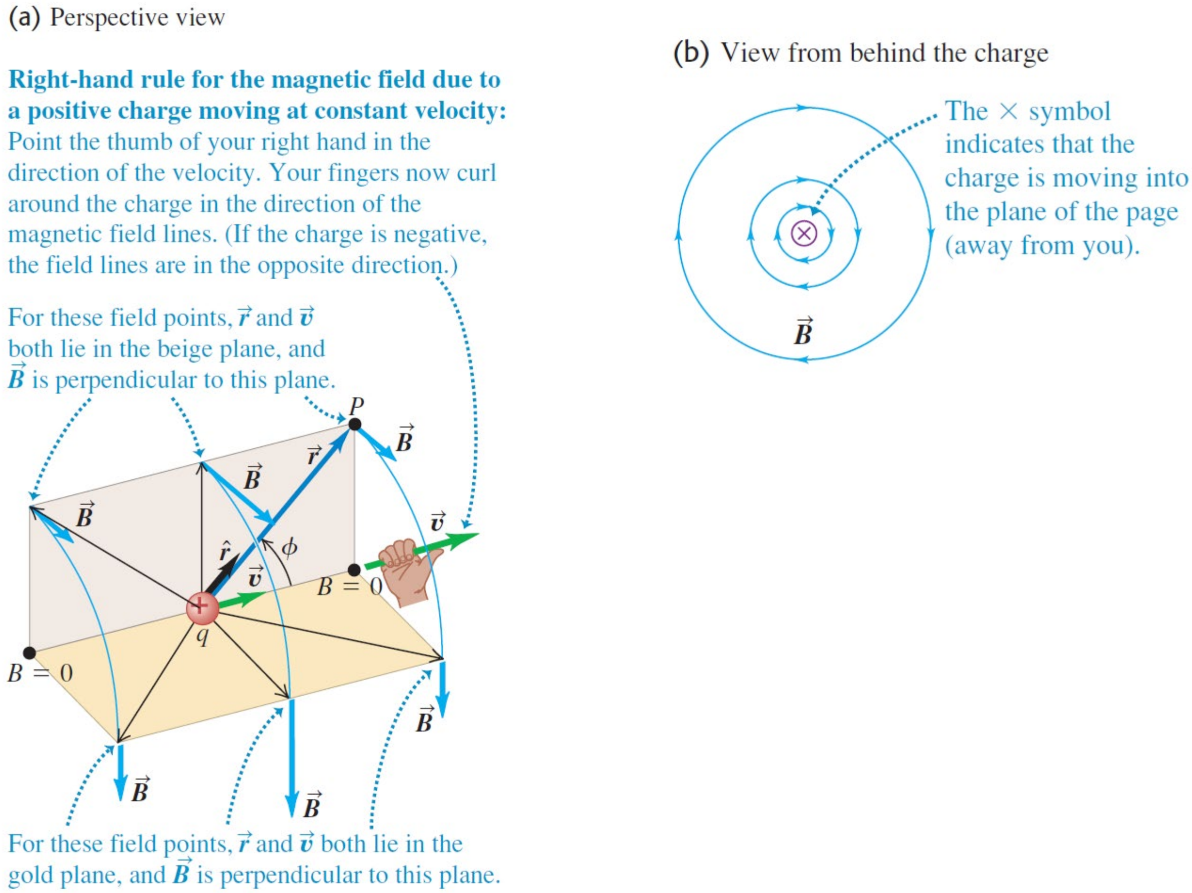
A. Magnetic Field Due to a moving charge:

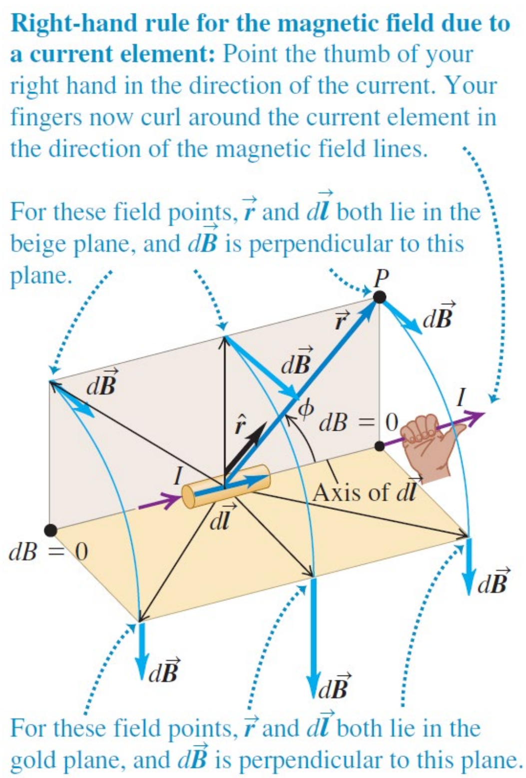
$$\vec{B} = \frac{\mu_0}{4\pi}\frac{q\vec{v} \times \hat{r}}{r^2}$$ (magnetic field of a point charge with constant velocity)



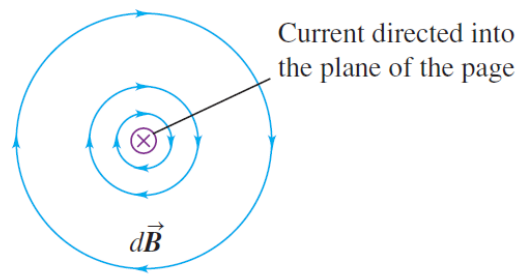
B. Magnetic Field Due to a Current Element:

$$d\vec{B} = \frac{\mu_0}{4\pi}\frac{I\,d\vec{l} \times \hat{r}}{r^2} \qquad \text{(magnetic fi}$$

(a) Perspective view



(b) View along the axis of the current element



C. Magnetic Field Due to a Long Current-Conductor

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