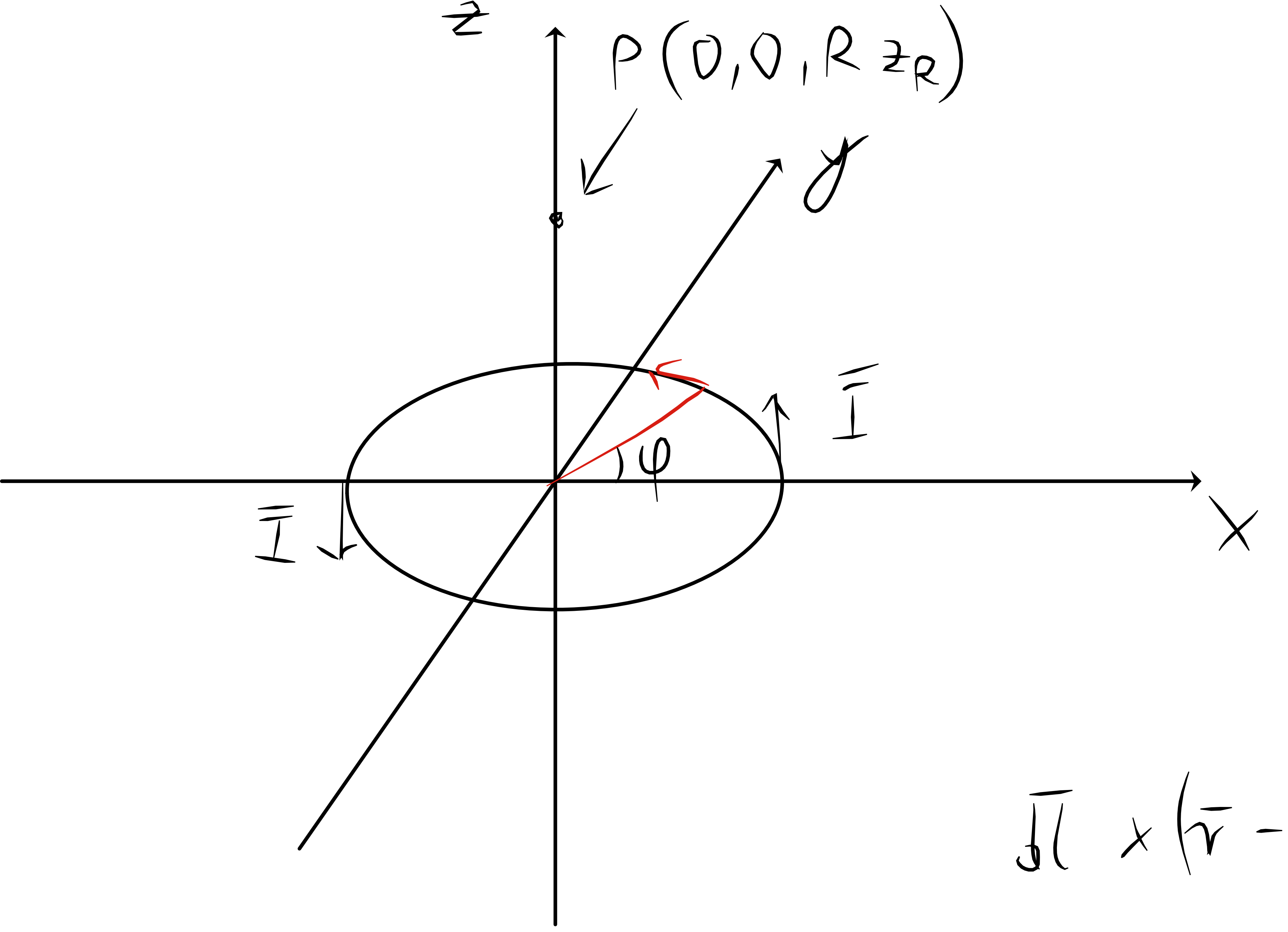

$$\bar{l} = R\left[\cos\varphi,\ \sin\varphi,\ 0\right]$$

$$d\bar{l} = R\left[-\sin\varphi,\ \cos\varphi,\ 0\right] d\varphi$$

$$\bar{r} - \bar{r}' = R\left[-\cos\varphi,\ -\sin\varphi,\ z_R\right]$$

$$d\bar{l} \times (\bar{r} - \bar{r}') = R^2 d\varphi \begin{bmatrix} -\sin\varphi \\ \cos\varphi \\ 0 \end{bmatrix} \times \begin{bmatrix} -\cos\varphi \\ -\sin\varphi \\ z_R \end{bmatrix} = R^2 d\varphi \begin{bmatrix} z_R \cos\varphi \\ z_R \sin\varphi \\ 1 \end{bmatrix}$$

$$\bar{B} = \frac{\mu_0 \bar{I}}{4\pi} \int_0^{2\pi} \left[z_R \cos\varphi,\ z_R \sin\varphi,\ 1\right] \frac{R^2}{R^3 (1+z_R)^{\frac{3}{2}}} d\varphi = \frac{\mu_0 \bar{I}}{2R\,(1+z_R)^{\frac{3}{2}}}\ \hat{e}_z$$

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