

Assignment V

Posted on 9th April, Due on 19th April

- 1). Start from Biot-Savart law $\vec{B}(\vec{r}) = \frac{\mu_0}{4\pi} \int \frac{\vec{J} \times \hat{\ell}}{\ell^2} dV'$, Prove $\nabla \cdot \vec{B} = 0$ and $\nabla \times \vec{B} = \mu_0 \vec{J}$ at steady current.
- 2). Find the vector potential and magnetic field above and below the infinite large plane carrying surface current of K .
- 3). Find the magnetic dipole moment of the spinning uniformly charged spherical shell. Calculate the magnetic force of attraction between the north and southern hemisphere of the shell.