

Homework 8

Due Friday 4/5/2013 - at beginning of class

Griffiths' 4 Problems

5.17 (Griffiths' 3rd Edition Problem 5.16)

5.23 (Griffiths' 3rd Edition Problem 5.22) You only need to find the potential. You do not need to take the curl to find the field.

5.24 (Griffiths' 3rd Edition Problem 5.23)

5.37(a) (Griffiths' 3rd Edition Problem 5.35)

6.1

6.3 - Work part (b) only.

Additional Problems

E.8.1 A non-uniform current $\vec{J} = \gamma r^2 \hat{z}$ flows in the \hat{z} direction in the region $a < s < b$. γ is a constant. Compute the magnetic field everywhere.

E.8.2 Compute the vector potential at the center of a square sheet of current $\vec{K} = K_0 \hat{y}$ where the current extends from $x = -a$ to a and $y = -a$ to a in the $x - y$ plane. K_0 is a constant.

E.8.3 A flat square loop of wire with side length ℓ in in the $x - y$ plane centered at the origin. The loop carries a current I in the clockwise direction when viewed from the positive z axis. Compute the vector potential at a point a distance $R > \ell$ along the x axis.