

PHYSICS 110B – HOMEWORK SET 7

Due Friday 5/28/04. Ten points per problem. Selected answers are provided.

Reading: Griffiths, Chapter 10.

1.) Problem 10.2.

$$W = \frac{\mu_0 k^2 l w h^3}{12 c^2}$$

2.) Problem 10.4.

3.) Problem 10.10.

$$\vec{E} = -\frac{\mu_0 k}{2\pi} \ln(b/a) \hat{x}$$

4.) Problem 10.20.

$$\vec{E} = \frac{1}{(Rc)^2} \frac{q}{4\pi\epsilon_0} [\Gamma_x \hat{x} + \Gamma_y \hat{y}]$$

$$\Gamma_x = [(\omega^2 R^2 - c^2) \cos(\omega t_r) + \omega R c \sin(\omega t_r)]$$

$$\Gamma_y = [(\omega^2 R^2 - c^2) \sin(\omega t_r) - \omega R c \cos(\omega t_r)]$$

5.) Problem 10.25.