PHYS 333 — Problem Set #2

Reading: Griffiths — Advertisement, Chapter 1.1–1.4

Problems due September 1:

1. Consider the vector field that we have been using in class:

$$\mathbf{d}(\mathbf{r}) = 2\,\hat{\mathbf{r}},$$

   and the paths I, II, III, and IV on the handout. Evaluate the following line integrals:

   (a) $\int_{\mathrm{I}} \mathbf{d}\cdot d\mathbf{l}$

   (b) $\int_{\mathrm{II}} \mathbf{d}\cdot d\mathbf{l}$

   (c) $\int_{\mathrm{III}} \mathbf{d}\cdot d\mathbf{l}$

   (d) $\oint_{\mathrm{IV}} \mathbf{d}\cdot d\mathbf{l}$

2. Griffiths 1.11

3. Griffiths 1.12

4. Griffiths 1.29

5. Griffiths 1.32