

Physics 195a
Problem set number 2
Due 2 PM, Thursday, October 17, 2002

Notes about course:

- Homework should be turned in to the TA's mail slot on the first floor of East Bridge.
- Collaboration policy: OK to work together in small groups, and to help with each other's understanding. Best to first give problems a good try by yourself. Don't just copy someone else's work – whatever you turn in should be what you think you understand.
- There is a web page for this course, which should be referred to for the most up-to-date information. The URL:
<http://www.hep.caltech.edu/~fcp/ph195/>
- TA: Anura Abeyesinghe, anura@caltech.edu
- If you think a problem is completely trivial (and hence a waste of your time), you don't have to do it. Just write “trivial” where your solution would go, and you will get credit for it. Of course, this means you are volunteering to help the rest of the class understand it, if they don't find it so simple. . .

READING: Finish reading the “Ideas of Quantum Mechanics” course note. Read the “Path Integrals: An Example” course note.

PROBLEMS:

7. A little handy math:
 - (a) If you have never gone through a proof of the Schwarz inequality before, do it now! Otherwise, you may write “been there, done that”, and receive credit.
 - (b) Exercise 5 in the “Ideas of Quantum Mechanics” course note.
8. Fourier series: Exercise 10 in the “Ideas of Quantum Mechanics” course note.

9. Tidying up the Ahronov-Bohm discussion: Exercise 1 in the “Path Integrals: An Example” course note.
10. Tidying up the Ahronov-Bohm discussion: Exercise 2 in the “Path Integrals: An Example” course note.
11. [Worth two problems] Extensions to Ahronov-Bohm discussion: Exercise 4 in the “Path Integrals: An Example” course note. I hope you find this problem amusing/stimulating!