

Physics 195a
Problem set number 3
Due 2 PM, Thursday, October 24, 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: Read sections 1-6 of the “Density Matrix Formalism” course note.

PROBLEMS:

12. Illustration of definition of a scalar product: Exercise 8 of the “Ideas of Quantum Mechanics” course note.
13. Thinking about operators: Exercise 9 of the “Ideas of Quantum Mechanics” course note.
14. Resonances in quantum mechanics: Exercise 12 of the “Ideas of Quantum Mechanics” course note.

15. Application of the uncertainty principle: Exercise 14 of the “Ideas of Quantum Mechanics” course note.
16. Linear operators as n -term dyads: Exercise 1 of the “Density Matrix Formalism” course note.
17. Some practice on the density matrix mathematics: Exercise 2 of the “Density Matrix Formalism” course note.