Physics 8.321, Fall 2002
Homework #9

Due **Wednesday, November 13** by 4:30 PM in the 8.321 homework box in 4-339B.

1. Sakurai: Problem 25, Chapter 2 (page 148)

2. Sakurai: Problem 34, Chapter 2 (page 150)

3. Sakurai: Problem 36, Chapter 2 (page 150)

4. Sakurai: Problem 37, Chapter 2 (page 150)

5. Write the wave functions $\psi_{k,n}$ for the states associated with the eigenvalues $E_{k,n}$ computed in problem 3, working in the following three gauges:

   (a) $\mathbf{A} = (-yB, 0, 0)$

   (b) $\mathbf{A} = (-yB/2, xB/2, 0)$

   (c) $\mathbf{A} = (0, xB, 0)$

6. Consider a charged particle in crossed electric and magnetic fields

$$\mathbf{B} = (0, 0, B), \quad \mathbf{E} = (E, 0, 0)$$

Solve the eigenvalue problem in one of the three gauges of the previous problem.