1. Solve: $u_{tt} = c^2 u_{xx}$, for $-\infty < x < \infty$, with the initial conditions $u(x,0) = e^{-|x|}$, $u_t(x,0) = 0$. Sketch the solution as in Figure 2, on p.36, for $t = 0, 1/(2c), 1/c, 2/c$. Compute the energy $E(t)$ of the solution according to eq. (1) on p.39. *Hint:* By conservation of energy, it suffices to compute $E(0)$.

2. (a) Text: Strauss, Partial Differential Equations, p.37, #8.
(b) Find the solution when $\phi(r) \equiv 0$ and $\psi(r) = \sin(r)/r$. The result is a *standing spherical wave*. Compare it with the standing wave of Example 1 on p.35.


5. Text: p.52, #16, #18.