Math 462 Dr. Wolfe ASSIGNMENT #4 Due November 17, 2009

1. p. 150, Ex. 1, **Strauss**.
2. p. 172, Ex. 2, **Strauss**.
3. p. 172, Ex. 4, **Strauss**.
4. p. 175, Ex. 1, **Strauss**.
5. p. 176, Ex. 6, **Strauss**.
6. p. 176, Ex. 8, **Strauss**.
7. (a) Solve

$$u_{tt} - c^2 u_{xx} = e^t \sin(2\pi x/L),\ 0 < x < L,$$
$$u(0,t) = u(L,t) = 0,\ u(x,0) = u_t(x,0) = 0.$$

   (b) Solve

$$u_{tt} - c^2 u_{xx} = q(x,t),\ 0 < x < L,$$
$$u(0,t) = u(L,t) = 0,\ u(x,0) = u_t(x,0) = 0,$$

   where $q(x,t) = \sin(2\pi x/L)$ for $0 \le t \le T$, $q(x,t) = 0$ for $t > T$. What happens to the solution as $t \to \infty$? Does it damp out, or does it continue to oscillate?