

MATH 462 Section 0101 Spring 2008  
**Partial Differential Equations for Scientists and Engineers**

**HOMEWORK # 9** (due Th April 10)

1 (25 pts). Problem 2 in §4.2 of Strauss.

2 (25 pts). Problem 1 in §4.3 of Strauss.

3 (30 pts). Problem 2 in §5.1 of Strauss. Use MATLAB to plot the first 6 Fourier modes in one picture. In another picture also plot the sum of the first 2, 4 and 6 Fourier modes (the truncated Fourier series  $S_2(x)$ ,  $S_4(x)$  and  $S_6(x)$ ), and the function  $x^2$ . Are  $S_2(x)$ ,  $S_4(x)$  and  $S_6(x)$  getting closer to  $x^2$ ? Explain.

4 (20 pts). Problem 4 in §5.2 of Strauss.