MATH 647 – Spring 2001

Homework 7

Due Friday April 13.

1. Solve the following Dirichlet problem in 2-dimensions.

$$\Delta u(x,y) = 0 \quad \text{for } (x,y) \in (0,\pi) \times (0,\pi)$$
$$u(0,y) = u(\pi,y) = u(x,\pi) = 0$$
$$u(x,0) = x(\pi - x).$$

2. Solve the following Dirichlet problem in 3-dimensions.

$$\Delta u(x,y,z) = 0 \quad \text{for } (x,y,z) \in (0,\pi) \times (0,\pi) \times (0,\pi)$$
$$u(0,y,z) = u(\pi,y,z) = 0$$
$$u(x,0,z) = u(x,\pi,z) = 0$$
$$u(x,y,0) = 0$$
$$u(x,y,\pi) = y \sin x.$$