

## Math 241 - Section C1H - Homework 11

Assigned: 4/3/08

Due: 4/9/08 at the start of class.

Notation: Exercise a.b.c stands for Exercise c from Section a.b.

Problems to hand in:

- (1) 7.1.1.
- (2) 7.1.8.
- (3) 7.1.14.
- (4) 7.1.25.
- (5) 7.1.27.
- (6) Suppose that  $r : [0, 1] \times [0, 1] \rightarrow \mathbb{R}^3$  with  $r(u, v) = (x(u, v), y(u, v), 0)$  be any smooth parametrization of the unit square  $0 \leq x \leq 1$ ,  $0 \leq y \leq 1$ ,  $z = 0$ . Let  $\vec{N}$  be the corresponding normal vector. Show that

$$\|\vec{N}\| = \left| \frac{\partial(x, y)}{\partial(u, v)} \right|.$$

- (7) 7.2.12.
- (8) 7.2.13.
- (9) 7.2.24.
- (10) 7.3.8.
- (11) 7.3.15.
- (12) 7.3.18 (parts a and d only).
- (13) Let  $C$  be a cylinder of radius  $r_0$  and height  $h$ . Let  $D$  be a torus with  $R = h/2\pi$  and  $\rho = r_0$  (in the notation of Example 7.33). How does the surface area of  $C$  compare with that of  $D$ ?