

## Vector Calculus

Homework Set 9

Due Wednesday, 23 March 2005

Course Web Site: <http://www.math.sfu.ca/~ralfw/math252/>Textbook: **Davis and Snider** "*Introduction to Vector Analysis*"**Reading:** Sections 4.6-4.8**Problems to study (for practice; you do not need to hand these in):**

- Section 4.6 (pp.236–237): 1, 3, 6
- Section 4.7 (pp.246–249): 1, 6, 7, 14, 15, 16, 21

**Problems to hand in:**

- Section 4.6 (pp.236–237): 2, 4, 5 (plot surface using Maple), 10 (see note 1)
- Section 4.7 (pp.246–249): 4, 8, 12 (plot surface using Maple), 18, 20 (see note 2)

*Notes:*

1. Problem 10 in Section 4.6 is quite quick starting from

$$dS = \left| \frac{\partial \mathbf{R}}{\partial u} \times \frac{\partial \mathbf{R}}{\partial v} \right| du dv ,$$

and using the identity  $|\mathbf{A} \times \mathbf{B}|^2 = |\mathbf{A}|^2|\mathbf{B}|^2 - |\mathbf{A} \cdot \mathbf{B}|^2$  (see Section 1.14 problem 7, or the second note on Homework Set 3).

2. For problem 20 in Section 4.7, plot the surface using Maple for  $0 \leq v \leq 2\pi$ , and calculate the surface area for this range of  $v$ .