

PROBLEM SETS
MULTIVARIABLE CALCULUS, SECTION B
SPRING 2024

Problems are from Susan Colley's text: *Vector Calculus, 4th edition*. Problem sets are to be submitted via the Canvas site. Homework is due by 5 pm.

Copying from or consulting a solutions manual of the text is a violation of the Honor Code. Students who violate this policy will have their names forwarded to an academic judicial officer for this violation.

- (1) **1.1** 22, 25 **1.2** 13, 17, 27, 33, 45(a) **1.3** 17, 28, 36
- (2) **1.4** 7, 11, 19, 22, 23, 26 **1.5** 1, 3, 13, 21, 25, 31, 37
- (3) **1.6** 7, 10, 15 **1.7** 7, 11, 15, 19, 31
- (4) **2.1** 2, 7 (see hint †), 10, 15, 21, 25*, 33, 41, 49
- (5) **2.2** 3, 5, 11, 19, 25*, 29, 39, 53
- (6) **2.3** 1, 3, 12, 35
- (7) **2.3** 29, 39, 43, 53*
- (8) **2.4** 2, 6, 10, 27, 32* (see hint ‡)
- (9) **2.5** 1, 8, 15, 23
- (10) **2.5** 29
- (11) **2.6** 5, 11, 15, 21
- (12) **2.6** 27, 31
- (13) **3.1** 4, 5, 9, 11, 17, 23, 27
- (14) **3.2** 7, 9, 13, 16
- (15) **3.3** 1, 5*, 8, 9, 19, 21, 26
- (16) **3.4** 3, 8, 12(a,b,c), 16, 23, 28 **Misc. Exercises** 39
- (17) **4.1** 9, 15, 19, 25, 28, 33(a), 39
- (18) **4.2** 1, 5, 13, 23(a), 32, 41, 46
- (19) **4.3** 1, 3, 13, 15, 24, 30
- (20) **4.4** 1, 5, 11, 15
- (21) **5.1** 1, 3, 9, 11, 16
- (22) **5.2** 3, 5, 13, 21, 23 (and simply read 41)
- (23) **5.3** 3, 7, 11, 17
- (24) **5.4** (sketch any you want with Maple) 3, 7, 11, 13, 15, 25*
- (25) **5.5** 9, 13, 15, 19, 31, 35
- (26) **6.1** 1, 3, 9, 17, 25, 35
- (27) **6.2** 1, 7, 9, 15, 25, 30

* For this problem, you will need to use the mathematical software package Maple (or other), which is available in the library and elsewhere on campus.

† Hint: Considering the individual components one at a time is insufficient. Suppose that one wanted the second coordinate to equal 1 - what happens?

‡ For plotting: use the `implicitplot3d` command in Maple. For the definition of minimal surface: see the paragraph just above the problem.