PROBLEM SETS
MULTIVARIABLE CALCULUS, SECTION A
FALL 2025

Problems are from Susan Colley's text: *Vector Calculus, 4th edition* (**not the fifth 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. Using generative AI for the completion of problem sets is also a violation. 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.