

Problem Sets - Math 042 Spring 2016 - Calculus III

Tufts University Department of Mathematics

Math 42 problem sets - textbook edition 2

Problems marked with an asterisk (*) will be graded more carefully.

Lecture	Section number	Section	Problem set
1	11.1, 11.2	Intro. to Vectors	§11.2: 5, 7, 23, 31, 44*, 45, 55, 75*
2	11.3	Dot Products	§11.3: 3, 5, 11, 19, 21, 29*, 49, 51, 57*, 75
3	11.4	Cross Products	§11.4: 4, 11, 15, 19*, 23, 56*, 66
4	11.5	Lines and Curves	§11.5: 11, 13, 16*, 28, 34, 39*, 58, 62, 66, 67
5	11.6, 11.7	Vector Functions, Motion	§11.6: 9, 13, 18, 27, 55*, 51; §11.7: 10, 33, 37*, 41
6	11.8, 12.1	Arc Length	§11.8: 11, 15, 26, 62*, 43, 45, 48*, 65
7	12.1	Planes and Surfaces	§12.1: 11, 17*, 29, 31, 35*, 43, 45, 71
8	12.1	Quadric Surfaces	§12.1: 47, 51, 55*, 59, 63, 65, 67*, 69
9	12.2	Graphs	§12.2: 11, 15, 21, 29, 32, 35*, 38, 48*
10	12.4	Partial Derivatives	§12.4: 14, 22, 33, 35*, 46, 49, 78, 81*
11	12.5, 12.6	Chain Rule; Directional Deriv.	§12.5: 6, 10, 14, 23, 32*, 55*, 60; §12.6: 3, 7
12	12.6	Gradients	§12.6: 9, 24, 29, 33*, 45, 55*, 70
13	Review		
14	12.7	Tangent Planes	§12.7: 11, 17, 28*, 31, 41, 54, 56*, 58
15	12.8	Max/Min Problems	§12.8: 4, 10, 19, 22*, 35*, 62
16	12.8	Max/Min Problems	§12.8: 42, 43*, 45, 60, 65*, 70
17	12.9	Lagrange Multipliers	§12.9: 4, 7, 15, 23*, 28, 30*, 33
18	13.2	Double Integrals	§13.1: 4, 7, 8, 22, 41*, 50*
19	13.2	Double Integrals	§13.2: 23, 29, 35, 57, 61*, 63*
20	13.3	Double Integrals (Polar)	§13.3: 11, 28, 35, 37*, 50*, 71
21	13.4	Triple Integrals	§13.4: 13, 15, 22, 23*, 25*
22	13.4	Triple Integrals	§13.4: 20, 33, 39, 41*, 50*, 55
23	13.5	Triple Integrals (Cylindrical)	§13.5: 13, 15, 18, 19*, 26, 27*, 31
24	13.5	Triple Integrals (Spherical)	§13.5: 37, 39, 40*, 45, 47*, 51, 53, 57
25	14.1, 14.2	Vector Fields & Integrals	§14.1: 10, 11, 24, 25, 34*; §14.2: 11, 17, 27*, 31
26	14.2	Line Integrals	§14.2: 33*, 35, 39, 45*, 47, 49
27	14.3	Conservative Fields	§14.3: 3, 12, 14, 15, 19*, 23*
28	Review		
29	14.3	Conservative Fields	§14.3: 7, 27, 31, 33, 43*, 45, 48, 49, 51, 53*
30	14.4	Green's Theorem	§14.4: 11, 14*, 17, 21, 29, 32, 33*
31	14.4, 14.5	Div and Curl	§14.4: 23, 26*, 41; §14.5: 9, 12, 16, 27, 33, 41, 51*
32	14.6	Parametric Surfaces	§14.6: 12, 13, 15, 17, 19*, 21, 23*
33	14.6	Surface Integrals	§14.6: 26, 27, 29, 32, 33, 35, 38, 39*, 41, 55*
34	14.6	Integrals of vector fields	§14.6: 43*, 46, 48, 61, 65*
35	14.7	Stokes' Theorem	§14.7: 4, 5, 7, 9*, 12*
36	14.7	Stokes' Theorem	§14.7: 14, 17, 20*, 22, 27*
37	14.8	Divergence Theorem	§14.8: 7, 9, 17, 19*, 20, 22*
38	14.8	Divergence Theorem	§14.8: 23, 25, 26*, 34, 37*
39	Review		
40	Review		

Math 42 problem sets - textbook edition 1

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Lecture	Section number	Section	Problem set
1	11.1; 11.2	Intro. to Vectors	§11.2: 5, 7, 23, 29, 38*, 39, 47, 61*
2	11.3	Dot Products	§11.3: 3, 5, 11, 13, 15, 23*, 39, 41, 47*, 65
3	11.4	Cross Products	§11.4: 4, 11, 17, 21*, 29, 48*, 58
4	11.5	Lines and Curves	§11.5: 9, 13, 16*, 20, 26, 31*, 40, 44, 48, 49
5	11.6; 11.7	Vector Functions, Motion	§11.6: 7, 11, 14, 21, 45*, 51; §11.7: 8, 25, 29*, 31
6	11.8, 11.9 (+), 12.1	Arc Length	§11.8: 7, 11, 22, 46*; §11.9: 9, 11, 14*, 73
7	12.1	Planes and Surfaces	§12.1: 11, 15*, 23, 25, 29*, 33, 35, 61
8	12.1	Quadric Surfaces	§12.1: 37, 41, 45*, 49, 53, 55, 57*, 63
9	12.2	Graphs	§12.2: 11, 13, 19, 27, 28, 31*, 34, 44*
10	12.4	Partial Derivatives	§12.4: 8, 12, 19, 21*, 32, 35, 62, 65*
11	12.5; 12.6	Chain Rule; Directional Deriv.	§12.5: 6, 8, 12, 19, 28*, 51*, 56; §12.6: 3, 7
12	12.6	Gradients	§12.6: 9, 18, 23, 27*, 40, 49*, 64
13	Review		
14	12.7	Tangent Planes	§12.7: 9, 15, 24*, 27, 37, 50, 52*, 54
15	12.8	Max/Min Problems	§12.8: 4, 10, 15, 18*, 29*, 54
16	12.8	Max/Min Problems	§12.8: 36, 37*, 39, 52, 57*, 62
17	12.9	Lagrange Multipliers	§12.9: 4, 7, 11, 15*, 20, 22*, 25
18	13.2	Double Integrals	§13.1: 4, 5, 6, 16, 33*, 42*
19	13.2	Double Integrals	§13.2: 17, 21, 27, 43, 47*, 49*
20	13.3	Double Integrals (Polar)	§13.3: 11, 24, 31, 33*, 46*, 65
21	13.4	Triple Integrals	§13.4: 13, 15, 22, 23*, 25*
22	13.4	Triple Integrals	§13.4: 20, 33, 35, 37*, 46*, 51
23	13.5	Triple Integrals (Cylindrical)	§13.5: 13, 15, 18, 19*, 26, 27*, 31
24	13.5	Triple Integrals (Spherical)	§13.5: 37, 39, 40*, 45, 47*, 51, 53, 57
25	14.1, 14.2	Vector Fields & Integrals	§14.1: 10, 11, 24, 25, 30*; §14.2: 11, 17, 27*, 31
26	14.2	Line Integrals	§14.2: 33*, 35, 39, 45*, 47, 49
27	14.3	Conservative Fields	§14.3: 3, 12, 14, 15, 19*, 23*
28	Review		
29	14.3	Conservative Fields	§14.3: 7, 27, 31, 33, 43*, 45, 48, 49, 51, 53*
30	14.4	Green's Theorem	§14.4: 11, 14*, 17, 21, 29, 32, 33*
31	14.4, 14.5	Div and Curl	§14.4: 23, 26*, 41; §14.5: 9, 12, 16, 27, 33, 41, 49*
32	14.6	Parametric Surfaces	§14.6: 12, 13, 15, 17, 19*, 21, 23*
33	14.6	Surface Integrals	§14.6: 26, 27, 29, 32, 33, 35, 38, 39*, 41, 55*
34	14.6	Integrals of vector fields	§14.6: 43*, 46, 48, 61, 65*
35	14.7	Stokes' Theorem	§14.7: 4, 5, 7, 9*, 12*
36	14.7	Stokes' Theorem	§14.7: 14, 17, 20*, 22, 27*
37	14.8	Divergence Theorem	§14.8: 7, 9, 17, 19*, 20, 22*
38	14.8	Divergence Theorem	§14.8: 23, 25, 26*, 34, 37*
39	Review		
40	Review		

(†) The material (on curvature and principal normal vector) in section 11.9 is not part of the course. But there are homework problems in this section that relate to the material in 11.8 (and actually appear in 11.8 in edition 2 of the textbook). You should do these problems.

Lecture schedule

Lecture	B and F block (T Th F)	C block (T W F)	E block (M W F)
1	01/21 Thu	01/22 Fri	01/22 Fri
2	01/22 Fri	01/26 Tue	01/25 Mon
3	01/26 Tue	01/27 Wed	01/27 Wed
4	01/28 Thu	01/29 Fri	01/29 Fri
5	01/29 Fri	02/02 Tue	02/01 Mon
6	02/02 Tue	02/03 Wed	02/03 Wed
7	02/04 Thu	02/05 Fri	02/05 Fri
8	02/05 Fri	02/09 Tue	02/08 Mon
9	02/09 Tue	02/10 Wed	02/10 Wed
10	02/11 Thu	02/12 Fri	02/12 Fri
11	02/12 Fri	02/16 Tue	02/17 Wed
12	02/16 Tue	02/17 Wed	02/18 Thu
13	02/19 Fri	02/19 Fri	02/19 Fri
Exam 1 Mon Feb 22 12:00-1:20			
14	02/23 Tue	02/23 Tue	02/22 Mon
15	02/25 Thu	02/24 Wed	02/24 Wed
16	02/26 Fri	02/26 Fri	02/26 Fri
17	03/01 Tue	03/01 Tue	02/29 Mon
18	03/03 Thu	03/02 Wed	03/02 Wed
19	03/04 Fri	03/04 Fri	03/04 Fri
20	03/08 Tue	03/08 Tue	03/07 Mon
21	03/10 Thu	03/09 Wed	03/09 Wed
22	03/11 Fri	03/11 Fri	03/11 Fri
23	03/15 Tue	03/15 Tue	03/14 Mon
24	03/17 Thu	03/16 Wed	03/16 Wed
25	03/18 Fri	03/18 Fri	03/18 Fri
26	03/29 Tue	03/29 Tue	03/28 Mon
27	03/31 Thu	03/30 Wed	03/30 Wed
28	04/01 Fri	04/01 Fri	04/01 Fri
Exam 2 Mon Apr 4 12:00-1:20			
29	04/05 Tue	04/05 Tue	04/04 Mon
30	04/07 Thu	04/06 Wed	04/06 Wed
31	04/08 Fri	04/08 Fri	04/08 Fri
32	04/12 Tue	04/12 Tue	04/11 Mon
33	04/14 Thu	04/13 Wed	04/13 Wed
34	04/15 Fri	04/15 Fri	04/15 Fri
35	04/19 Tue	04/19 Tue	04/20 Wed
36	04/21 Thu	04/20 Wed	04/22 Fri
37	04/22 Fri	04/22 Fri	04/25 Mon
38	04/26 Tue	04/26 Tue	04/27 Wed
39	04/28 Thu	04/27 Wed	04/29 Fri
40	04/29 Fri	04/29 Fri	05/02 Mon
Final Exam Mon May 9 8:30-10:30am			