MA425 ASSIGNMENT SHEET (11/15) Fall 2011

Text: E. Saff, A. Snider *Fundamentals of Complex Analysis*, Third Edition

We hope to cover a great deal of the text, since it gives a new setting to review calculus and analysis, and the subject has enormous applications. This sheet will be updated throughout the semester as needed, and I will make some remarks on several of the homework problems.
There will be several quizzes, usually announced the class before the quiz. In addition, I expect a longer quiz on **Thursday, September 15**.
Usually homework will be collected at each class. Only a few problems will be graded, and the grader/instructor should be convinced that you understand the issue that is being raised, and that you can express yourself clearly (for homework, quizzes and exams). I am likely to give some projects for work outside of questions from the text.
It is important to come to class. In addition to office hours, feel free to send me (a reasonable amount of) email about questions on homework, etc.

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Office Hours: T 10:45-11:30; W 2:30-3:15 (or by appointment; if I am in the office and you see me, we can try to talk at other times)

Lesson	Section	Study	Homework Assignment
1	1.1,2	Introduction	p 5: 3b, 7b, 9, 19, 26; p12: 3, 5[there is a clever solution!], 8 [make a picture!], 13, 14 *p.5* # 22: induction
2	1.3	Polar coordinates; arg	p22: 7 a,e,h, 10 [is this true for Arg in place of arg ?], 11 *(continued)* p22: 17, 20 (law of cosines), 27
2,3	1.4	Exponential !!The exponential is the most important function in the theory**!**	p31:4 (a), 6(b), 9 (induction)12,, 13, 14
3,4	1.4	” Intro. to Logarithm	p31: 18a,c, 20 (cross-multiply), 23a p123: 1a-d, 3, 4, 5 (quadratic!), 6
3	1.5	Powers and Roots	p37:4, 5df, 10, 12, 19(!)
4	1.6	Some “topology”	p. 42: 2-7, 15, 17, 20
5	2.1	functions, limits	p. 56: 1 a-c, e, 4b, 5b-e,6b, 7a, 8ab, 9, 13
	2.2, 2.3	continuity, f' f', Cauchy-Riemann	p. 63: 2, 4, 7bc, 11abd (algebra with $z \neq i$) p. 70: 3, 4, 7acd, 9cd
6	2.3, 2.4	Analyticity, Cauchy-Riemann	p.72 11acdh, 12. p. 77 2, 5, 6(!), 7(!), 10 (hint for 6) write $u_r, u_\theta, v_r, v_\theta$ in terms of partials with respect to x and y (chain rule), and then use the $C-R$ equations we know
7	2.5	Harmonic functions, Review	p 84: 1ac, 2, 3c, 5, 7, 8, 15, 17a, p. 90:2 (think of heat distribution)
8		Quiz	through §2.5, no §1.7
9	2.6, 3.1	High School Math	p. 108: 1, 4, 5 (Taylor!), 7, 8 11a-c, 13a
9	3.2, 3.3	Exponential/Logarithm	p 115: 5ac, 7, 9cd, 14ab, 17ab; p. 123: 11, 12, 17, 18

10	3.4, 3.5	More harmonic	p. 129: 1, 2, 5, 6. p. 137: 4, 7, 8, 12a, 15ab
11	4.1-2	MA 261 review	p. 159: 1ab, 5, 13 p. 170: 3acd, 5, 6ab, 12, 14ab
12	4.3	¡ Fundamental Theorem!	p. 178: 1aehi, 4, 5, 7 Project: real-complex differentiability
13	4.4b	Cauchy Theorem	(See my proof on course web page) p. 199: 1, 9def, 10ac, 11, 13, 16 We are doing integrals!
14	4.5, 4.6	First consequences	p. 212: 3a-d, 5, 8, 13 (in 13 g is not assumed analytic!) p. 219: 2, 4, 7, 10, 17
15	4.7	Harmonic Ftns., review	p. 225: 2, 4, 8, 10, 11
16		Hour Exam	
17	5.1, 5.2	Taylor series	p. 239: 1def, 2cd, 7, 8, 11abd, 13,17 p. 249: 1ef, 3cd, 5aceg, 8ab
18	5.3	Power series (!!!)	p. 258: 4, 5, 7, 12,15 (hint for 12: power series)
19	5.4	Radius of convergence	p.266:1d, 2(!), 5,6
20	5.5	Laurent series	p 276: 3, 7ab, 12 (write out the series carefully and look!)
21	5.6,7		p. 285: 1, 2 3abc, 6, 12, 13, 15 p. 290: 1, 5, 7
22	5.8, Review		p. 301: 2, 3, 5,8 (for 8c, find $\Gamma(1)$, then integrate)
23	6.1, 6.3, Quiz	calculus!	p. 313: 1abch, 3, 7 p.p. 325: 3, 6, 9, 10
24	6.2, 6.4	integrals	p. 317: 1, 5, 6; p. 336: 1, 3,8
22	6.3	Calculus	p. 325: 3, 6, 9
23	6.5, 6.6	'half the residue'	p. 344: 2, 4, 5 p. 354: 1, 3, 8
24	7.1, 7.2	Conformal maps	p. 374: 2bc p. 382: 1a, 3 ($\|\alpha\| > 1$ only), 11a-d
25	7.3	Möbius	p. 392: 3acde, 5, 11, 12
26	7.5	Schwarz-Christoffel	p. 416: 3, 4, 5