

THE COLLEGE OF STATEN ISLAND
DEPARTMENT OF MATHEMATICS
COURSE OUTLINE

MTH 223 -- TECHNICAL CALCULUS

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SH/ab

TEXT: Technical Calculus with Analytic Geometry,
Fourth Edition by Allyn Washington

<u>LESSON</u>	<u>TOPIC</u>	<u>SECTION</u>	<u>EXCERCISES</u>
1	Algebraic functions, Function notation, graphs	1.1 1.2 1.4	6/1,2,7,9,14,17,18; 12/1,3 21/1,3,29
2	Limits	3.1	76/1,2,4,7,8,10,11,13,17, 25,27,32,37,41,42; 7/2,8,15; 12/1,21
3	The slope of a tangent to a curve	3.2	81/1-11 odd; 76/3,6,9,12,29,38,43; 7/33,36
4	The Derivative, the delta process	3.3	85/1-13 odd, 25; 81/4,10
5	Instantaneous rate of change	3.4	89/1,5,9,13,17,21; 85/12,15
6	Derivatives of polynomials	3.5	94/1-25 odd,29,33
7	Derivatives of products	3.6	98/1-6,9,14,27,35; 94/2,6
8	Derivative of quotients	3.6	98/ 8, 13-19 odd
9	Derivative of a power, chain rule	3.7	104/ 1-9, 15,16,17,22,25,32; 98/ 7,21,25
10	Implicit differentiation	3.8	108/1,3,5,7,11,21,25 104/10,19; 98/11,38
11	Tangents and normals	4.1	119/1,3,4,5,8,9,13 108/10,19,23; 104/11,33
12	Increasing and decreasing functions	4.5	139/1,2,3,4,6,7,9,11, 119/2,7,10; 108/9,26

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13	Relative maxima & minima, concavity, inflection	4.5	139/ 5,8,13,17,19,27; 119/ 6,11
14	REVIEW		139/12,18,25
15	EXAM #1		
16	Applied max/min problems	4.7	148/1,3,11,12,15
17	More problems	4.7	148/2,6,19,23,25
18	Differentials	4.8	154/1-5,7,9,11,13,14,17
19	Antiderivatives	5.1	161/1-9 odd, 10,13,23,27
20	Indefinite Integral	5.2	166/1-11 odd
21	The u-method of Integration	5.2	166/15-29 odd,33,35
22	Approximate area under a curve	5.3	171/ 1,3,5,7; 166/ 24,34,36
23	Exact area under a curve	5.3	171/ 8a,11,12,17
24	The Definite Integral	5.4	174/ 1-25 odd; 171/ 2,4,8b,16
25	REVIEW		181/ 9; 174/ 16,28
26	EXAM #2		
27	Applications of indefinite integral: velocity and acceleration	6.1	189/1,2,3,4,5,8
28	Velocity and acceleration	6.1	189/ 6,12,7-13 odd
29	Area by integration	6.2	195/ 1-11 odd, 15,17
30	Integration: electrical, mechanical applications	6.2	195/ 29,30

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31	Derivatives of sine and cosine functions	7.3	242/ 1,5,9,13,21; 195/ 4,10
32	Derivatives of other trigonometric functions	7.4	246/ 2,5,9,21,33; 242/ 2,4,7,47
33	Derivatives of inverse trigonometric functions	7.6	256/ 1-7 odd, 8, 23
34	Review of exponential and Logarithmic functions	8.1	271/ 1,3,13,15,25; 256/ 9,13
35	Derivatives of Logarithmic functions	8.2	275/ 1-11 odd, 14; 271/ 11,17,29
36	Derivatives of exponential functions	8.3	278/ 1,3,5,9,11,17,33; 275/ 2,4,6,15,41
37	REVIEW		283/ 1,3,5,9,11,25; 263/ 1,-11 odd, 29
38	EXAM # 3		
39	Integration: standard forms (a) general power formula	9.1	287/ 1-7 odd, 10, 11-17 odd, 26,27
40	(b) The basic Logarithmic form	9.2	290/ 1,3,7,8, 9-15 odd
41	(c) The exponential form	9.3	294/ 1-11 odd, 25; 290/ 2,17,19
42	(d) Basic trigonometric forms	9.4	297/ 1-7 odd, 11,13,15,23,25; 294/ 6,12,16,17
43	(e) Inverse trigonometric forms	9.6	305/ 1-11 odd, 15,19
44	Integration by parts	10.1	313/ 1-11 odd, 2,8,12,17; 307/ 5,11,19,24

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45	Integration by substitution	10.2	317/ 1,2,3-11 odd, 17
46	REVIEW		
47	Infinite series:	13.1	386/ 1,3,5,9,13,21,23,24
48	Maclaurin Series	13.2	391/ 1,2,3,4,5-13 odd
49	Taylor series	13.5	402/ 1-9 odd, 11,12,17
50	Taylor series	13.5	415/ 1,3,5,21,23,37
51	REVIEW		
52	EXAM # 4		
53	REVIEW FOR FINAL		
54	REVIEW FOR FINAL		
55	REVIEW FOR FINAL		
56	REVIEW FOR FINAL		