Syllabus and Problems
Mathematics 151, Calculus I
Fall Semester 2009

Text: *Calculus, Early Transcendentals* by Jon Rogawski, published by W. H. Freeman and Co.

Lecture	Reading	Topics
1	1.1, 1.2, 1.3	Inequalities, intervals, functions. Types of functions.
2	1.4, 1.5	Trigonometric functions. Inverse functions.
3	1.6, 1.7, 2.1	Exponentials and logarithms. Use of graphing calculators.
4	2.2, 2.3, 2.4	Tangents. Limits, numerically and graphically. Continuity. Laws of limits.
5	2.5, 2.6, 2.7	Evaluating limits. Trigonometric limits. The Intermediate Value Theorem.
6	2.8, 3.1, 3.2	Definition of limit and derivative. Power rule.
7	3.3, 3.4	Product and quotient rule. Rates of change.
8	3.5, 3.6	Higher derivatives. Differentiation of trigonometric functions.
9	3.7	Chain rule.
10	First Hour Exam	(In the usual class time and place.)
11	3.8	Implicit differentiation.
12	3.9, 3.10	Differentiation of inverse functions, exponentials, logarithms. Note: Hyperbolic functions may be omitted.
13	3.11	Related Rates.
14	4.1, 4.8	Linear approximations. Newton's method.
15	4.2	Maxima and minima. Critical points.
16	4.3, 4.4	Shape of a graph. Mean Value Theorem. First derivative test. Concavity.
17	4.5	Curve sketching. Asymptotes.
18	4.6	Maxima and minima problems.
19	4.7	Indeterminate forms. L'Hôpital's rule.
20	4.9	Antiderivatives.
21	5.1	Approximating and computing area.
22	Second Hour Exam	(In the usual class time and place.)
23	5.2	Definite integrals.
24	5.3, 5.4	Fundamental Theorem of Calculus.
25	5.5, 5.6	Net change. Integration by substitution.
26	5.7, 5.8	Transcendental functions. Exponential growth.
27	6.1	Area between two curves.
28	Review	

Note This is an approximate syllabus only and some variations are to be expected.

Final Examination: Wednesday, December 16, 2008, 4-7 PM. Locations will be announced.

Suggested Homework Problems for Mathematics 151

Section 1.1:   2, 7, 12, 15, 19, 26, 34(a), 35, 41, 43, 46, 49, 53, 61, 62, 70
Section 1.2:   7, 9, 13, 14, 23, 29, 37, 38, 45
Section 1.3:   1, 5, 9, 13, 14, 16, 17, 18, 27, 30
Section 1.4:   1, 3(a), (b), 4(a), (b), 5, 8, 9, 10, 15, 20, 31, 38
Section 1.5:   1, 2, 4, 9, 11, 16(a), (e), 23, 24, 27, 29, 30, 31, 40
Section 1.6:   3, 4, 5, 6, 11, 12, 13, 24, 25, 29
Section 1.7:   1, 2, 3, 13, 16
Section 2.1:   5, 6, 7, 11, 22, 23, 33
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Section 2.4:   1, 2, 3, 4, 7, 17, 27, 39, 40, 59, 61, 62, 65, 69, 70, 80
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Section 2.6:   3, 4, 6, 9, 10, 20, 21, 22, 28, 38
Section 2.7:   2, 4, 7, 15, 19
Section 2.8:   1, 2, 4, 6
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Section 3.7:   2, 9, 11, 17, 21, 22, 25, 27, 37, 43, 44, 49, 57, 67, 70, 76, 85
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Section 3.10:   1, 3, 7, 10, 12, 20, 23, 30, 35, 36, 45
Section 3.11:   3, 5, 7, 9, 14, 15, 19, 26
Section 4.1:   3, 4, 9, 11, 17, 18, 33, 41, 44
Section 4.8:   3, 7, 9, 13, 20
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Section 4.4:   7, 10, 17, 22, 25, 28, 37, 47
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Section 4.7:   3, 5, 6, 9, 11, 12, 17, 19, 20, 27, 28, 32, 43, 48
Section 4.9:   3, 13, 18, 20, 25, 29, 33, 35, 39, 41, 47, 64
Section 5.1:   1, 7, 13, 15, 18, 20, 31(c), (d), 35, 37, 41, 60
Section 5.2:   1, 7, 8, 13, 14, 15, 17, 31, 37, 61, 74
Section 5.3:   7, 10, 11, 23, 31, 33, 36, 37, 44, 49
Section 5.4:   7, 9, 11, 15, 21, 24, 29, 31, 32
Section 5.5:   1, 4, 10, 13
Section 5.6:   9, 10, 11, 18, 20, 25, 38, 39, 45, 51, 53, 56, 58, 82, 89
Section 5.7:   7, 17, 22, 25, 27, 43, 50, 59, 61, 70
Section 5.8:   2, 5, 7, 8, 12, 24, 31
Section 6.1:   1, 5, 6, 8, 9, 11, 16, 30, 33, 36, 41