Math 1151Q-02
Fall 2008

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Practice Final 2002 Answers

M1151_FinalF2007_Answers.pdf

Course Parameters

Text: *Calculus, Early Transcendentals,* by James Stewart 6th Edition

Class Meetings : MWF 11-12:15, MSB 311

Office Hours : MW 9:00 – 10:45, or by appointment

Credit limitations: not open for students who have passed Math 112, 115, or 120.

Grading: Homework & Quizzes - 20%, Two exams - 20% each, Final - 40%

Notes on the calendar: Fall semester classes begin Monday, August 25, and end Friday, December 5. September 8 is the last day to drop without a W. October 27 is the last day to drop.

First Hour Exam: October 3.
Second Hour Exam: November 7

Final: December 10, 2008, 3:30-5:30, MSB 311

Review Sessions: October 2, November 6, December 9

Goals. Our goal is to learn the basic concepts and techniques of differential calculus, and also to gain an appreciation for the beauty and utility of this marvelous subject.

Expectations.

1. I expect you to come to class, on time. You are responsible for everything that happens in class whether

or not you attend. If you must miss a class, you must notify me in advance in order to be allowed to make up the work (phone, email, note in mailbox, or verbal communication).

2. I expect you to work outside of class, somewhere on the order of 6-8 hours per week. Homework is work to be done at home - we will not spend much class time going over homework exercises. You are welcome and encouraged to work together on homework and to get help from other sources (friends, instructor, Calculus Center, Q-Center, online), but you must write up solutions yourself.

3. I expect your homework submissions to be neat and, where appropriate, to include explanations with full sentences, correct spelling and grammar. Show your work. Mathematics is not just scribbling with the answer circled at the end. You need to communicate the brilliance of your insights to others.

4. No late assignments will be accepted. No make-up exams will be given. The only exceptions to this rule may be made if you notify your teacher in advance with a valid excuse.

There are three categories of homework in Math 1151 :

1. **Exercises:** These should be handed in, but will be checked by a homework grader. Students can also go online to check their work with WebAssign. A brief explanation is required for all answers. Writing down an answer like "7" with no work shown will receive no credit.
2. **Problems:** These are to be written up carefully and handed in for grading.
3. **Team problems:** These are to be worked on and discussed in a team setting, the solutions written up and then handed in for grading as directed by the instructor (one submission per team).

Homework Assignments

Due Date	Assignment
8/27	Automathography
8/29	p. 20 – 2,10*,18,23,28,29,43 p.34 – 4,5,9,14
9/3	p. 43 – 3,5-7,14,29,35,41,50,51,54* p. 58 – 10,13,16,26 (p. 70 – 3,6,18,29,30,35 in class)
9/8	p. 107 – 15,18,21 (in class)
9/10	p. 70 - 36,37,48,49,59,61,63 p. 87 – 4,9 p.97 – 4,9,12,13,14,25,27,32
9/12	p. 128 -1,5,9,17 (in class)
9/15	p. 107 – 25,30,42 p. 117 – 1,2,3,4,7,19,20,25 p. 128 – 18,29,36*
9/17	p. 128 – 38,47 p. 140 – 4,8,17,20 p. 150 – 3 (in class)
9/22	p. 140 – 23,26,34,39 p. 150 – 5,12*,13,22,30,31,36,37 p. 180 – 4,7,10,23 (in class)
9/24	p. 187 – 4,5,11,14 p. 195 – 1,5,9,12 (all in class)
9/26	p. 162 – 2,3,23,24,27,34*,43 p. 180 – 26,29,34
10/1	p. 196 – 39,40,44,47 Practice Exam (not graded)
10/6	p. 213 – 5,14,21,26,47,52
10/10	p. 220 – 2,9,10,11,19,33,40,44 p. 231 – 10,11,29 p.245 – 4 (in class)
10/15	p. 239 – 3,9,15,16 p. 245 – 7,13,14,20,23
10/17	p. 252 – 3,6,13,14,19,23,26
10/20	Derivative quiz, practice problems p. 262 – 1 - 61 odd
10/22	p. 277 – 5,6,8,31,34,49,53,56,65,74 p. 247 – 37
10/27	p. 286 – 11,14,15,17,24* p. 295 – 24,31,53 p. 304 – 7,12,15,18 (in class)
11/3	p. 314 – 12 p. 320 – 11 p. 328 – 2,3,13
11/5	p. 328 – 17,24,31
11/10	p. 345 – 7,21,27,32,37,38 (in class)
11/12	p. 364 – 2 (in class)
11/14	p. 345 – 49,50,53,59,60,67 p. 349 – 60 or p. 328 – 46
11/19	p. 364 – 1(a),15,17,20 p. 376 – 1,6,9,18,34 In class: p. 388 – 4,6,13,19,26
11/21	In class: p. 397 – 6,12,23 p. 406 – 7,10
12/3	p. 388 – 31,35,44,54,59 p. 330 - 47

* - denotes Problem

A note on the exercises

The table above contains a list of proposed exercises and problems for each section of the text we discuss. Many of them are odd-numbered, so the answer appears in the back of the book. I suggest that you not look at the answer until you have given the problem your "best shot." For additional challenges, tackle the *Problems Plus* section at the end of each chapter.

Math 135 Outline - Fall 2007

This is a guide only. Topics may vary according to our progress in class.

(*Calculus, Early Transcendentals,* by James Stewart 6th Edition)

Date	Section	Topic
8/25	1.1, 1.2	Four Ways to Represent a Function, Mathematical Models
8/27	1.3, 1.4	New Functions From Old Functions, Graphing Calculators
8/29	1.5	Exponential Functions
9/1	No Class	Labor Day
9/3	1.6	Inverse Functions & Logarithms
9/5	2.1, 2.2	Tangent and Velocity Problems, Limits
9/8	2.3	Limit Laws
9/10	2.4	Definition of a Limit
9/12	2.5	Continuity
9/15	2.6	Limits at Infinity
9/17	2.7	Derivatives and Rates of Change
9/19	2.8	Derivative of a Function
9/22	3.1	Derivatives of Polynomials & Exponential Functions
9/24	3.2	Product and Quotient Rules
9/26	3.3	Derivatives of Trigonometric Functions
9/29	3.4	The Chain Rule
10/1	3.5	Implicit Differentiation
10/3	Exam I	
10/6	3.6	Derivatives of Logarithmic Functions
10/8	3.7	Rates of Change in the Natural and Social Sciences
10/10	3.8	Exponential Growth and Decay
10/13	3.9	Related Rates
10/15	3.10	Linear Approximations and Differentials
10/17	4.1	Maximum and Minimum Values
10/20	In Class Gateway	

	Exam	
10/22	4.2	Mean Value Theorem
10/24	4.3	How Derivatives Affect the Shape of a Graph
10/27	4.4	L'Hospital's Rule
10/29	4.5	Summary of Curve Sketching
11/31	4.6	Graphing with Calculus and Calculators
11/3	4.7	Optimization Problems and Review
11/5	Review	
11/7	Exam 2	
11/10	4.8	Newton's Method
11/12	4.9	Antiderivatives
11/14	5.1	Areas and Distance
11/17	5.2	The Definite Integral
11/19	5.3	Fundamental Theorem
11/21	5.4	Indefinite Integrals and the Net Change Theorem
11/24	No class	Thanksgiving
11/26	No class	Thanksgiving
11/28	No class	Thanksgiving
12/1	5.5	The Substitution Rule
12/3		Review for final exam
12/5		Review for final exam

Q-Center Help & Tutoring

The Q-Center will continue to staff our regular hours

Level 1 of the Homer Babbidge Library:

1-11 Sunday, 11-11 Monday-Thursday.

Our website will always have the most current information about what services are available for which courses:
http://qcenter.uconn.edu

Academic Integrity

("Beginning with the fall semester 2000, syllabi should include a warning about academic misconduct, particularly cheating and plagiarism." See http://vm.uconn.edu/~dosa8/code2.html)

"A fundamental tenet of all educational institutions is academic honesty; academic work depends upon respect for and acknowledgement of the research and ideas of others. Misrepresenting someone else's work as one's own is a
serious offense in any academic setting and it will not be condoned."

"Academic misconduct includes, but is not limited to, providing or receiving assistance in a manner not authorized by the instructor in the creation of work to be submitted for academic evaluation (e.g. papers, projects, and
examinations); any attempt to influence improperly (e.g. bribery, threats) any member of the faculty, staff, or administration of the University in any matter pertaining to academics or research; presenting, as one's own, the ideas or words of another for academic evaluation; doing unauthorized academic work for which another person will receive credit or be evaluated;
and presenting the same or substantially the same papers or projects in two or more courses without the explicit permission of the instructors involved."

"A student who knowingly assists another student in committing an act of academic misconduct shall be equally accountable for the violation, and shall be subject to the sanctions and other remedies described in The Student Code."

EXAM 1 REVIEW

Functions: Definition, Functions from other functions, fog, f(x-2)+1, etc. Inverse functions.

Limits: calculations, formal definition, proof in linear case, epsilon-delta graphs, left and right

Continuity: definition, graphical interpretation, Intermediate Value Theorem

Derivatives: slope of tangent line, velocity, rate of change, limit definition, calculate derivative limits from algebra and from graphs, derivative implies continuous

Example of epsilon-delta proof. Prove that the limit as x approaches 4 of 2x-7 is 1. Use e for epsilon and d for delta.

Given e > 0, we want to make abs(2x-7 - 1) < e. Equivalently, abs(2x-8) < e or 2abs(x-4) < e or abs(x-4) < e/2.
Take d = e/2. If 0 < abs(x-4) < d then abs(2x-7 - 1) < e .

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Exam 1 F2004.pdf

Sample Exam 1, Fall 2005, Answers

1. FFFTFFT

2. $y = 2(x-1)/(e^2 - 1)$

3. (a) $P = 100{,}004(1.08)^{t/2}$; $y = 105000 + 5325t$

   (b) will be adequate

   (c) until around 2001

4. Done in class

5. $V = \pi r^2(36-2r)/6$

6. $y = -8\sin(\pi t/6) - 18$, or $y = 8\sin((\pi/6)(t-6)) - 18$

7. (a) $(1/3)^{x/5}$ (b) $7(x+2)(x-3)(x-5)/30$

8. (a) $y = -5x + 11$; $y = -4x + 9$

   (b) 3.5 ; 3

   (c) Skip this part

9. (a) $t = 4$ (b) 1000 (c) in class

10. (a) AJ (b) G (c) BDEJ (d) None (e) CI

11. Graph is not labeled correctly

Exam 1, Fall, 2002 (hard copy available)

1. Done in class
2(a). 7 (b) - infinity
3. Done in class
4. Done in class, delta = .76
5. Done in class Must be continuous at x = 3. Need not have a derivative at x =2.
6. 9 mph
7. the derivative is the line y = -.5x - 1

Exam 1, Spring 2001

1(a). -4,0,3 (b) 4 (c) DNE (d) 0 (e) no, g(1) = 0
2(a). x less or equal to 9 (b) 4 < x <= 9 (c) x greater or equal 4, not equal 5
3. This one should be easy
4(a) DNE (b) + infinity (c) + infinity (d) 1/2
5. Use -x^2 < x^2cos(1/x) < x^2
6(a) - infinity (b) - infinity (c) 0
7. Standard epsilon-delta proof. In this case delta = 5/3 epsilon
8(a) jump discontinuity, one-sided limits differ (b) g(1) is not defined (c) g(4) is not equal to lim g(x) as x approaches 4
9. If f(x) = x^3 - 3, then f(0) = -3 and f(2) = 5. By ICT

Exam 2 Review Topics

Practice Exam 2
Answers to Practice Exam 2

Final Review Topics:

- Concepts: limits (epsilon and delta), continuity (Intermediate Value Theorem), derivatives (Mean Value Theorem), integrals (Fundamental Theorem of Calculus)

- Skills: calculate limits and derivatives using the limit definition, product, quotient and chain rule, position-velocity-acceleration, rates of change, implicit differentiation, tangent lines, derivatives and graphs, related rates, Max-Min on an interval, linear approximation, exponential growth and decay, properties of graphs, optimization, Riemann sums, definite integral

Sample final

(My) Answers to Sample final (numerical only).

1. 1/4, 2. 3. 4. 3/pi 5. 1.9975 6. 4 7. 8pi/5 8(a) 1/2 (b) 1 (c) 8

9. 7/3 10. 9 11(a) increasing $x > 1$; decreasing $x < 1$.

11(b) concave up $x < 0$ or $x > 2/3$; concave down $0 < x < 2/3$ 11(c) $x = 1$ relative min

11(d) $x = 0, 2/3$ inflection points 12. length = 25, width = 10

Fall 2003 FINAL

Fall 2003 FINAL Answers
Related Links
Riemann Sums
Bay of Fundy