BUSINESS CALCULUS - MATH 152 Summer 2008

Instructor: Mr. Adam Graham-Squire   **Office**: Phillips 413   **Phone**: 962-5752   **Email**: gadam@email.unc.edu

Class Meeting: MTWRF 11:30-1:00, Phillips 383

Office Hours: Mon/Thurs 10:30-11:30, Tues 9-10, Wed. 1-2, and by appointment. (These are tentative and subject to change.)

Text: *Calculus for the Managerial, Life & Social Sciences (7th edition)*, by Soo Tan.

Calculators: A scientific calculator is required, and one with graphing capabilities is recommended. Symbolic manipulators, such as the TI-89 or its equivalent, are not allowed. All calculators must be approved by me, before test 1, or else will not be allowed.

Prerequisite: A score of 520 or higher on the SAT Subject Test, Math, Level I or 2 (formerly SAT II, Math, Level IC or IIC), a score of 2 on the Calculus AP exam (or BC sub-score), or a passing grade in Math 10 is required. Considerable facility with algebra and word problems is vital for success in this class. You may not take this class if you have received credit for Math 31.

Course Content: Math 152 is a survey of differential and integral calculus of one variable. It is a terminal course and will **not** prepare you for Math 32. Student mastery of pre-calculus algebra skills is assumed from the start. Word problems requiring calculus techniques for their solution form a large portion of the material. Clear and correct mathematical communication of your thinking is a must.. We will essentially cover the following chapters of the book.
>   Chapter 2 2.4-2.6
>   Chapter 3 3.1-3.5, 3.7
>   Chapter 4 4.1-4.5
>   Chapter 5 5.1, 5.2, 5.4-5.6
>   Chapter 6 6.1-6.6
>   Chapter 7 7.4, 7.5

Exam Dates:

First Exam	Wednesday	May 21
Second Exam	Friday	May 30
Third Exam	Tuesday	June 10
Final	Monday	June 16, 11:30am-2:30pm

Grading System: Each midterm exam is worth 1/6 the total grade. Homework and quizzes combined will be worth 1/6 the total grade (Two of those will be dropped for the final grade, one quiz, one HW). The final is worth 1/3 the total grade. HW is due at the beginning of class and <u>no</u> late HW is accepted.

NOTE: There will be a minimum final exam grade in order to pass this course. Your final course grade may not exceed your final exam grade by more than one letter grade.

Attendance: You are expected to be in class each day. Attendance will be taken occasionally, mainly for my own amusement. There will not be make-ups for missed quizzes or exams. If you must miss an exam for a valid reason, and you clear it with me ahead of time, the relevant section of the final can replace one missed exam.

No class on Monday, May 26 (Memorial Day).
The drop date is Thursday, May 29 for Summer Session I.

Honor Code: It is expected that each student in this class will conduct himself or herself within the guidelines of the Honor System. All academic work should be done with the high level of honesty and integrity that this university demands. Regarding HW, it is okay to work with other students on the problems, but each student should write up their answers individually.

Resources: Math Help Center: Phillips 224 Monday through Thursday 1:30 to 3:30 pm.
>   Old Finals: http://www.math.unc.edu/Faculty/mccombs/
>   http://www.math.unc.edu/finalexams_ugrad.html
>   Math Lab   click on 'Math Help Center' in   http://www.math.unc.edu/
>   Blackboard   http://blackboard.unc.edu

Math 152 -- Common Practice Problem List

(*Calculus for the Managerial, Life, and Social Sciences*, Tan, 7th edition)

Section	Problem
2.4	1,5,7,11,13,19,21,31,35,39,53,55,57,59,65,67,68 (1;no finite limit, could say limit "is" ∞),75,77,79,85
2.5	3,7, odds 9-19,23,25,29,33,34 (limit does not exist as finite no.; limit is – ∞),35,38 (ans: 3,1), 45,47,51,53,59,65,71,73,79
2.6	3,5,18 (y= -3x+4),22 (ans: f'(x)=-1.5/(x^2) , y=-1.5x+3),25,26 (f'(x)= -1/ ((x-1)^2), y= -.25x-.75), 30 (a. 48,56,62.4, all in ft/sec, b. s'(t)=128-32t;s'(2)=64 in ft/sec, c. -32 ft/sec, falling, d. t = 8 sec), 45,47,49,53
3.1	5,9,21,23,25,29,33,36 (ans: 1,23),44 (slope is 3/16; y=(3x/16)+(7/4)),45,49,55,59
3.2	9,11,13,17,23,37,41,57
3.3	19 (1st rewrite with negative exponents), 23, 32 (-2u((1+u^2)^4)((1-2u^2)^7)(26u^2+11)), 35,41,43,51,53,55,63,71,77,79
3.4	1,3,5, 6, 9,11,13abc,17
3.5	9,11,17,19,21,23,29,34 (since 1st and 2nd deriv's both pos. on named interval, % of obese Americans was increasing at increasing rate during those 13 years),35,37
3.7	13,16 (b. -.3, c. -.2973),29,31,37,40 (+/- 64800 dollars),41
4.1	2(inc' on (1, ∞),constant on (-1,1),dec' on (– ∞, -1)),5,15,25,31,33,43,44(ans: c.),45,46 (ans: b.),51,61,65,77,85,99
4.2	5,7,9,11,14 (rate greatest at 10, inc' between 8 and 10, dec' between 10 and 12),15,21,27,33,45,49,53,55,59,61,63,75bc,81
4.3	5,9, odds 21-29, 35,37,41,43,53,57, sketch graph of C(x)=.5x / (100-x), then 61
4.4	1,3,5,12 (abs' min' is 0;occurs at (0,0); no abs' max),13,21,25,33,47,51,61,67
4.5	3,7,11,12(radius (18/Pi)^(1/3), height 2*(18/Pi)^(1/3)),17,21,25 and on p. 91f. 72 (A=40x-x^2,for 0≤ x≤40),74 (V= x(8-2x)(15-2x) for 0<x<4),75,78 (A=52-2x-50/x for x>0),79
5.1	19,23,25 (hint: temp'ly let y = 3^x),27,29,33,43abc,46(False)
5.2	19, 25,27,43,47,49,54(about 34.5 hours before, about 1:30 PM previous day),55,56 (False)
5.4	22 (f'(x)=[9e^(-3x)]{[4-e^(-3x)]^2}) ,28 (f'(t)=[(1+t)^2]/ {(e^t)[(1+t^2)^2]}),31,37,41,45,47,55,71c
5.5	11,13,19,21,29,35,41,43,45,50 (inc' on (0,e), dec' on (e, ∞)),55,60 (dW = 1.84(e^[1.84+ln(2.4)]) (.1) in (kg/m)(m) so dW ≈ 2.8 (in kg)), 61,68 (domain (0, ∞), inc' on (.5, ∞), dec' on (0,.5), con' down on (0, ∞), min at pt (.5, 1-ln(.5)), vert' asym' is line x = 0, no horiz' asym'), 69, 70 (False), 71
5.6	3,5 (Hint: Q(0)=5.3; Q(1) = 5.3 +.02(5.3)),9,11,17,20abd (a. 10, b. max <400, d. ~15flies/day) ,24 (dec' & con' up on (-∞,∞), pt (0, 10) is on graph, horiz' asym' on the right is line y = 6, no other asymptotes) ,29a
6.1	1,4,7,9,17,21,27,33,35,45,47,53,57,61,69,89,91
6.2	5,7,15,19,27,29,35,37,45,51,59,61,65
6.3	5
6.4	3,9,37,38 (ans: 4/3 +.5 sqrt(2),41,46 (ans: 31.68 in millions) ,51,53,55
6.5	5,12 (ans: 9/176),23,25,27,31,35,44(ans: 64/3),51,53,54(ans: (2/3)kR^2),65,66 (ans: -4); 49 on p.439
6.6	1,7,15,19,23,31,35,37,41,45,47,49,51,53,55
7.4	12 (ans: 1),17,18 (int' diverges),19,27, find value or show that integral diverges: a. $\int_{-\infty}^{0} \frac{e^{-x}}{1+e^{-x}}\,dx$, b. $\int_{0}^{\infty} \frac{e^{-x}}{1+e^{-x}}\,dx$, then 39
7.5	7,9,12 (a. 10/9 b. 10/27) ,13 (-2e^(-.5ln(2))+2e^(-.25ln(2)),16 (1-1/e, e^-1.2,(e^-.6) -(e^-1.4)),17,19,29

Note: This is not a list of the homework problems. Although some of these problems may show up on HW assignments, they are mainly given here as a guide to help you study for exams or if you want to look ahead to what the next lecture will focus on. It is highly recommended that you read ahead in the textbook to prepare yourself for the next lecture. Even if you feel you do not understand the material when you read it, it will make the following lecture easier to follow.