COLLEGE ALGEBRA

Spring 2007

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WEB PAGE: http://www.math.ksu.edu/math100/spring-2007

Students are encouraged to book-mark the **College Algebra Home-Page** located at the above web address. The syllabus printed here is just a hard copy of the internet version. If you need assistance with using the internet, go to iTAC, Information and Technology Help Desk, 313 Hale Library, 532-7722, 8:30am-5pm. For locations of computers on campus click Computers.

WEB-PAGE: Exam room assignments, practice exams, exam solutions and grade scales will all be posted on the web-page. If you have difficulty viewing these, paper versions will sometimes be posted on the **College Algebra Bulletin Board** located in the hallway of Cardwell close to CW 129. The home-page will also contain links to old exams. Any updates and messages will be posted on the home-page so check the site regularly. This is **not a K-State online** course; grades will be kept by your recitation instructor and will not be available online. Information and updates will be posted on the college algebra page http://www.math.ksu.edu/math100/spring-2007 not on K-State online.

TEXT: ***College Algebra,*** by Beecher, Penna & Bittinger, **soft cover special 2nd edition for Kansas State University,** Addison Wesley 2006, ISBN 0-536-25499-0. (Available at K-State Union Book Store and Varney's Book Store).

CALCULATOR: ***Any type of TI-83, TI-83 Plus or TI-84 Plus (required!)*** Click here for help on using the TI-83 for College Algebra.

ATTENDING CLASSES: Each student is required to be enrolled in a lecture (LEC) meeting Tuesday and Thursday, and a recitation (REC) meeting Monday or Friday. There will be three Tuesday evening exams (the QZ on your schedule is for these exams and not a regular class meeting). It is important that you attend lectures and take notes. Review your notes after each lecture to make sure that you have understood the concepts and then work on the homework problems listed in the syllabus below. Any questions you have may be addressed in the following recitation or in the Help Sessions. Exam problems will be based on examples given in lecture as well as the homework problems. All the lecturers know what problems will be on the exams.

GRADING: You may earn 700 points in this course: 100 points on each of the three evening one hour exams, 200 points on the comprehensive final exam, 100 points on the weekly homework, and 100 points for recitation work. Your recitation instructor will administer your exams and determine your final grade. Not doing homework or not attending recitation will lower your final letter grade.

HOMEWORK: Homeworks will be **due by 6 p.m. each Tuesday (**Thursday for the first homework**).** The homework should be turned in to the **homework box of your recitation instructor** (not your lecturer). Homework boxes are located in the first floor hall way of Cardwell. Many instructors have more than one box so check that the box has the correct day and time. If you are unsure of your instructor's name a list of instructors will be posted on the College Algebra Bulletin Board (near CW129). You must show work for every problem; a correct answer alone will not receive any credit. There will be 15 homework assignments, worth 8 points on full weeks and 4 points on exam or other part weeks. Only four problems will be graded (2 on part weeks), each worth 2 points. Write your name and your recitation instructor's name and the recitation day & time at the top of the front page and staple your homework. The homework will be graded and returned to you during your recitation class. If there is a mistake or oversight in the grading, see your recitation instructor. If you have a legitimate excuse for being late with your homework contact your recitation instructor. Generally, an average grade can be assigned for such homework, but it will not be graded.

RECITATION GRADE: The 100 recitation points will be assigned at the discretion of your recitation instructor. Make sure you understand your instructor's grading scheme and expectations. Generally, this score is based on attendance, class participation, quizzes, correcting exam mistakes, handing in practice exams or presenting problems at the board.

EXAM DATES:
Tuesday Feb 6 Exam 1, 7:15-8:15pm
Tuesday Mar 6 Exam 2, 7:15-8:15pm
Tuesday Apr 10 Exam 3, 7:15-8:15pm
Tuesday May 9 Final Exam, 7:00-8:50pm

EXAMINATIONS: Room assignments for the examinations will be announced in class, and posted on the web-page and bulletin board. **Exam room assignments will be by recitation class** and *not* by lecture. Be sure to know your exam room the week before the first exam and again before the final exam. Picture ID must be brought to the exam and shown when turning in your paper. You will need your calculator. No books or notes may be used in the exam. Students should follow the proctor's instructions during the exam and sit at least one seat apart. Write clearly and show all your work - **A correct answer alone may not receive any credit.** The exams will be returned in your recitation class. If there is a mistake or oversight in the grading, see your recitation instructor first. Your recitation instructor has the authority to change blatant errors in the grading. If the error is subtle, you must appeal to the original grader. Exam solutions and scales will be posted on the College Algebra Bulletin Board (near CW 129) as well as the home-page.

Missed Examinations: *If you miss or expect to miss an hour examination for a legitimate reason (for example, a serious illness), then notify your recitation instructor as early as possible prior to the examination. If your recitation instructor excuses your absence from an hour exam, then your final grade will be based on your remaining scores. If your recitation instructor does not excuse your absence from an hour exam, then your score on that exam will be zero.* ***There will be no make-up exams.*** *If you miss more than one hour exam or the final exam, for verifiable personal emergencies, then it is possible to receive the grade of ``incomplete'' for the course. It is your responsibility to work out the details with your recitation instructor before final grades are made out. Booking air tickets etc to leave town before May 10 is not a valid reason for missing the final.* ***Under no circumstances will the grade ``incomplete'' be awarded simply because a student is failing the course.***

GENERAL INFORMATION: *If you have any condition, such as a physical or learning disability, which will make it difficult for you to carry out the work as I have outlined it, or which will require academic accommodations, please notify me,* ***the coordinator Chris Pinner, CW113,*** *as well as your recitation instructor, within the first two weeks of classes. Bring to me the documentation provided by disabled student services and provide me with an email address (or other means of contacting you). It is your responsibility to check with me on the location and time of the special exams and report to the assigned room at the instructed time.*

HELP SESSIONS: Help sessions will be held Monday through Thursday in Cardwell Hall. A help session schedule with specific times and location will be posted across from the Math office in Cardwell and at ***http://www.math.ksu.edu/math/helpsession.htm***. Several instructors will be present to assist you. Help sessions begin the second week of class. Your recitation instructor will also announce office hours during which you may seek help.

TUTOR INFORMATION: Students may apply for a College Algebra tutor in the Academic Assistance Center (101 Holton Hall, phone 532-6492). Free tutoring is also available from the Tutoring Center (201 Leasure Hall, phone 532-5703). Academic Assistance Center offers Group Tutoring Sessions in College Algebra, as well as academic skills instruction and direct application of study techniques to College Algebra. Students may enroll in an EDCEP 111, Enhanced University Experience Lab, linked to College Algebra. A list of individual tutors (who charge $5 to $20 an hour) for College Algebra is also available in the information box outside Cardwell 138.

STUDY ADVICE: Students are expected to attend all classes. Missing class can seriously affect your course grade. It is important that you learn to manage your time and have assignments done well before the deadline. College Algebra moves *faster than high school algebra.* **Don't fall behind.** Prepare for the lectures by reading the book and looking over the assigned homework before class. Take notes and ask questions during class. Review your lecture notes to make sure that you have understood all of the concepts presented. It is essential that you attempt the homework problems **before** going to recitation. **Solve lots of problems,** this the best way to solidify your understanding of mathematics and to prepare for exams. Odd numbered practice problems very similar to the hand-in questions are listed next to the homework assignment; solutions to the odd numbered problems are given in the back of the book (a solutions manual with worked out solutions to the odd problems is also available for the book). If you find you can't do something **ask for help**. All the exam problems will be based on lecture examples and the homework, so it is important that you attend the lectures and take good notes. Do all of the homework and do not throw away the returned homework! Your old homework and lecture notes will be your study guide for exams **.**

VIDEOS: There are 16 video tapes of lectures held at the Reserve Desk of Hale Library. Tapes can be watched in the Library or checked out overnight. These lectures are based on the text book, but are not by K-State Faculty so may not contain all the material required for the exams (though they are a useful way to make up missed lectures on certain sections).

ONLINE LECTURE NOTES: Professor Burckel's Math 100 lecture notes are online at ***http://www.math.ksu.edu/math100/burckel-notes***.

SAMPLE EXAMS: Sample exams will be posted on the web-page before each exam. Old College Algebra Exams and solutions are on reserve at Hale Library. The Math home-page contains links to old exams. Keep in mind that the topics and questions will generally be different from semester to semester.

ACADEMIC DISHONESTY: Plagiarism and cheating are serious offenses and may be punished by failure on the exam, paper or project, failure in the course and/or expulsion from the University. For more information refer to the academic conduct policy in `` ***Student Life Handbook***'' and the honor system web site.

USEFUL DATES:
Jan 31 - last day for 100% refund
Feb 7 - last day for 50% refund
Feb 15- last day to drop without a W
Mar 19- last day to drop with a W

Holidays
Jan 15 - Monday recitations should try to attend a Friday recitation 1/12/07.
Mar 19-23.

Homework Assignments College Algebra, Spring 2007

Lecture	Section	Topic	Homework Problems (Hand In)	Practice Exercise (Don't Hand In)	Due Date
Jan 11	R.1	Real Numbers	14,18,20,24,28,34,44,68,76,82,84	13,15,17,23,27,33,39,59,75,81,83	HW1 Jan 18 (4pts)
	R.2	Integer Exponents	12,18,24,32,42,44,48,50,58,60,78,82,98	11,17,21,31,41,43,47,49,59,61,77,81,97	
Jan 16	R.3	Polynomials	6,12,14,18,20,22,24,28,32,34,36,38,40,42	5,9,13,17,21,25,29,31,33,35,37,39,41	HW2 Jan 23 (8pts)
	R.4	Factoring	4,8,14,18,24,26,30,32,34,36,42,44,46,52,58,70,104,130	3,7,13,15,21,25,29,31,33,35,41,43,45,51,57,69,103,129	
Jan 18	R.5	Fractions	8,14,18,32,36,40,44,46,50,60,62	7,13,19,31,35,39,43,45,49,59,61	
Jan 23	R.6	Radicals	2,4,8,10,12,30,48,74,84,92,98,102,104,112,122,130	1,3,7,9,11,29,47,73,83,89,99,101,103,111,121,129	HW3 Jan 30 (8pts)
Jan25*	1.1	Graphing Calculator	10,20,28,34,40,50,60,70,72,74,80,84,88,102,104	11,23,29,35,39,49,61,69,71,73,79,83,87,101,103	
			C1,C2, C3, C4 (Calculator problems attached to syllabus)		
Jan30*	1.2	Functions, Graphs	4,16,20,26,28,42,48,50,54,56,58,62,66,68,84,88	5,17,19,21,27,41,47,49,53,55,57,61,65,67,85,89	HW4 Feb 6 (8pts)
	1.3	Linear Functions	8,10,20,24,26,30,32,36,46	5,9,15,23,27,29,31,35,43	
Feb 1*	1.4	Equations of Lines	12,16,24,26,30,34,42,46,54,58,62,64,68	11,13,23,25,27,33,41,47,53,57,61,63,67	
Feb 6*	Review	**TEST 1, 7:15-8:15pm**	Sections R1 - R6, 1.1-1.4		
Feb 8*	1.5	More on Functions	4,6,14,16,18,20,22,26,28,32,34,38,40,42,60,70	3,5,13,15,17,19,21,25,27,31,33,37,41,43,59,69	HW5 Feb13 (4pts)
	1.6	Algebra of Functions	16,18,24,46,60,64,66,68,78,80,88	13,17,23,45,59,63,65,73,77,79,89	
Feb13*	1.7	Symmetry and Transformations	2,4,6,12,14,18,26,30,32,34,40,42,48,76,86,98,104,112,114	1,3,5,11,13,17,25,29,31,33,37,41,47,75,85,97,105,107,113.	HW6 Feb20 (8pts)
Feb15*	2.1	Linear Equations	8,10,14,20,22,30,38,40,42,48,54,86,100,102	7,13,15,19,21,31,37,39,41,47,53,85,99,101	
Feb20*	2.2	Complex Numbers	6,10,20,24,26,30,36,48,52,58,66,70	5,9,19,23,25,31,37,47,51,57,65,69	HW7 Feb27 (8pts)
	2.3	Quadratic Equations	18,20,30,32,34,38,40,42,46,54,58,70,78,92,100,102,104	17,19,29,31,33,37,39,41,45,53,57,69,79,91,99,101,103	
Feb22*	2.4	Graphs of Quadratics	2,8,14,16,26,30,36,38,40,48	1,7,13,17,25,31,33,37,39,47	
Feb27*	2.5	Solving Equations	8,10,12,14,16,22,24,30,50,54,60,66,86,102	9,11,13,15,17,21,23,31,49,57,59,65,85,101	HW8 Mar 6 (8pts)
Mar 1*	2.6	Linear Inequalities	2,4,10,14,20,24,28,36,44,48,54,62	1,3,9,13,19,23,27,35,43,47,53,63	
Mar 6*	Review	**TEST 2, 7:15-8:15pm**	Sections 1.5-1.7, 2.1-2.6		
Mar 8	3.1	Polynomials	12,14,16,18,22,28,36,38,44,46,50,58,62,64,68	11,13,15,17,21,27,33,35,43,45,47,55,61,63,69	HW9 Mar13 (4pts)
Mar 13	3.2	Long Division	2,4,6,10,12,14,18,20,22,26,52,54	1,3,5,9,11,13,17,19,21,25,51,53	HW10 Mar27 (8pts)
Mar15*	3.3	Zeros of Polynomials	8,24,38,44,50,52,54,58,60,62,64,68,98	7,23,37,45,49,51,53,57,59,61,63,67,97	
Mar27*	3.4	Rational Functions	4,12,14,16,20,24,32,44,48,50,58,64	3,11,13,15,19,23,31,43,47,49,57,63	HW11 Apr 3 (8pts)
Mar29*	3.5	More Inequalities	12,20,22,40,46,48,50,56,58,62	13,19,21,39,45,47,49,53,55,61	
Apr 3*	4.1	Composition, Inverses	20,24,28,36,48,50,52,54,58,64,70,78	19,23,27,35,47,49,51,53,57,65,67,75	HW12 Apr10 (8pts)
	4.2	Exponentials	10,14,22,32,38,46,48,80	9,15,25,35,37,45,47,79	
Apr 5*	4.3	Logarithms	12,14,16,18,30,32,38,40,50,52,72,78,82,90	11,13,15,19,27,33,37,43,49,51,73,77,81,83	
Apr10*	Review	**TEST 3, 7:15-8:15pm**	Sections 3.1-3.5, 4.1-4.3.		
Apr12*	4.4	Log Properties	8,12,26,32,40,42,44,50,52,64,68,72	7,11,25,31,39,41,43,47,51,63,71,73	HW13 Apr17 (4pts)
	4.5	Exponential & Log Equations	4,8,10,14,16,18,20,24,28,34,36,40,44,68,74,76	3,7,9,11,17,19,21,23,29,33,35,39,45,69,73,77	
Apr17*	4.6	Exponential Growth/Decay	2,8,10,12,14,20	1,7,9,11,13,17	HW14

Apr19*	5.1	Systems of Equations	10,18,22,30,32,34,38,42,54,56,58	9,17,25,29,31,33,37,43,45,53,55	Apr24 (8pts)
	6.4	Non-linear Systems	10,16,20,44,54,58,60,68	9,19,23,43,53,57,59,67	
Apr24*	5.2	Systems in Three Variables	4,8,12,24	3,7,13,19	HW15 May 1 (8pts)
	5.3	Systems and Matrices	6,8,10,14,22,24. Using Calculator: 26,32,38,40	5,7,9,13,21,23. Using Calculator: 25,31,37,39	
Apr26*	5.4	Matrix Arithmetic	12,18,24,26,28,40,42,44,46	11,17,23,25,27,39,41,43,45	
	5.5	Inverses of Matrices	2,4,6. Using Calculator to find Inverse: 32,36,38	1,3,5. Using Calculator to find Inverse: 31,35,37	
May 1*	Review				
May 3*	Review				
May 9*	**FINAL 7:00-8:50 p.m.**	Comprehensive			

* Bring your graphing calculator to lecture on these days.

Calculator Problems for HW3

Round numerical answers to 3 decimal places.

C.1 Graphing $y=3x^3 -5x^2- 300x +300$

At each stage sketch the graph you obtain. **Always label your axes** to show the scale (typing [WINDOW] will show you the x and y ranges).

a) Plot the graph using the standard scale. (Press [Y=] and input the expression $Y_1=3x^3 - 5x^2 - 300x+300$ then press [GRAPH], if you have changed the scale you can return to the standard scale using [ZOOM] [6:ZSTANDARD]).
b) Type [ZOOM], and move the cursor up or down until you find [0:ZoomFit], then type [ENTER]; a shortcut is just to type 0 after hitting [ZOOM]. ZoomFit automatically adjusts the y-scale so that the graph fits on the screen. Type [WINDOW] to see the new range of the y axis (making Yscl=100 may help your sketch).
c) Plot the graph from x=-5 to x=13 (Type [WINDOW], then input Xmin = -5, Xmax=13, the other settings can be left alone, but make sure that Xres =1. Use [ZOOM][0:ZOOMFIT] again as necessary to adjust the y range).
d) Adjust the x range until all three x-intercepts are nicely visible on the screen.

C.2 Finding Values

Find the values of y corresponding to x=3.2 and to x=-1.6 on the graph plotted in C1.
a) Type [TRACE] 3.2 [ENTER] and obtain the value of y at the bottom of the screen.
b) Type [2nd], [CALC], [1:value]. In the lower left corner you will see x= . Type [(-)]1.6 [ENTER].

C.3 Finding x-Intercepts

a) Plot the graph of $x^4 - 5x^2 + 3x -9$ from x=-3 to x=3 (you should have two x intercepts visible)
b) Use [2nd][CALC][2:ZERO] to find the value of the right most intercept. (Use [TRACE] to move cursor to a value of x near to the intercept. Type [2nd][CALC], [2:ZERO]. The calculator will ask you for a Left Bound. Move cursor to the left of the intercept and type [ENTER]. The calculator will next ask you for a Right Bound. Move cursor to the right of the zero and type [ENTER]. Finally, the calculator will ask you for a Guess. Move cursor as close as you can to the zero and type [ENTER]. You should see x=2.3193869, y=0 on the screen. Thus the value of the intercept is (2.319,0) to 3 decimal places.
c) Repeat the process to find the other intercept.

C.4 Zooming In

Plot the graph of $y=6x^2 - 17x +12$
a) Use [ZOOM] [2:ZOOM IN] to blow up the region near to the origin where the graph just crosses (appears to touch) the x-axis (move the cursor to the region to be blown up and press [ENTER]). Repeat several times until you can clearly see the two x-intercepts. Sketch the graph (include the window settings to show the scale).
b) Use [2nd][CALC], [2:ZERO] to find the two x-intercepts.
c) Repeat part (a) using [ZOOM][1:ZBOX] (move the cursor to the position of one of the corners, press [ENTER], use the cursor to make the sides of the box around the region you want to blow up, press [ENTER]).