

MTH 127-105 - College Algebra Expanded

Department of Mathematics, College of Science

Instructor: Tom Cuchta (call me Tom)

Time: 10:00-10:50 MTWRF

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Office Hours: 2:00-3:00 MTW

9:00-10:00 Thursday

12:00-1:00 Friday

Textbook: College Algebra - Michael Sullivan (ISBN: 0-13-240286-6)

Technology: Marshall University computer account; graphing calculator, preferably TI-83 or higher, a graphing calculator is required!

Attendance and Daily Quiz: attendance itself is not required, but there will be a daily quiz grade given at the end of class on recent topics that we have covered, each quiz will be worth 10 points and be designed to test knowledge that was recently covered in class. At the end of the semester, your lowest three quiz scores will be dropped.

Homework: there will be nightly homework that will be graded and due the next day -- meaning legitimately try every problem and we will spend some time the next class discussing it -- homework will be accepted up until a week after it is assigned, but we will still be discussing some of the problems the next day, so please be familiar with the problems. Each homework assignment will be worth 20 points.

Exams: dates to be determined

Final Exam: date: Monday, 14 December 2009 time: 10:15-12:15

Extra Credit: bonus questions, difficult homework questions, and potentially projects or written papers may be done for extra credit. It will be notified to you in class or e-mail about extra credit opportunities

GRADING: Grades will be determined by finding the total average of each daily quizzes, homeworks, and exams and then averaging those values and adding extra credit at the end. This final average will be your final grade percentage.

NOTICE: Makeup quizzes and exams will only be given for excused absences. Any excused absence must be verified according to the procedure in the Undergraduate Catalog. Please refer to page 124 of the Undergraduate Catalog (http://www.marshall.edu/catalog/Undergraduate/ug_09-10.pdf). Please contact me in advanced whenever possible when an excused absence is expected to schedule a time for a makeup.

Objectives of the course: From the mathematics department's description... "A brief but careful review of the main techniques of algebra. Polynomial, rational, exponential, and logarithmic functions. Graphs, systems of equations and inequalities, sequences."

Topics covered:

Set theory

The real number system

Integer exponents

Scientific notation

Order of operations

Operations with polynomials

Factoring

Radical exponents

Basic equation solving

Distance formula

Midpoint formula

Graphs of equations
Circles

Definition of a function
Domain and range
Graphs of functions
Linear functions
Quadratic functions
Polynomial functions
Radical functions
Rational functions
Exponential functions
Logarithmic functions

Curve fitting and regression models
Increasing, decreasing, and constant functions
Piecewise defined functions
Operations with functions
Composition of functions
Even and odd functions
Inverse functions
Transformations of graphs and functions

Variation
Maxima and minima
Population growth
Exponential decay
Continuously compounded interest

Complex number system
Inequalities
Intermediate value theorem
Remainder theorem
Factor theorem
Synthetic division
Fundamental theorem of algebra
Rational zeros theorem
Descartes' rule of signs

Solving systems of linear equations graphically
Substitution method
Elimination method
Gaussian elimination
Gauss-Jordan elimination
Matrix operations
Inverse matrices
Determinants
Cramer's method