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Math 160C College Algebra Review Guide for Test 3 Fall 2008
1 December 2008

Topics to be covered on Test 3 include anything from the text, from the lectures, from the website, and from the handouts related to the following sections of the textbook.

- Section 4.1 Polynomial Functions and Their Graphs
  - Definitions
    1. Polynomial
    2. Leading Term
    3. Degree
    4. Leading Coefficient
  - Four Equivalent Statements Related to Real Zeros
  - Multiplicity of a Zero and how it affects the graph
  - Application of the Intermediate Value Theorem (See WebSite)

- Section 4.2: Dividing Polynomials
  - Division Algorithm
  - Long Division
    1. Writing the results in the form p = qd + r as well as $\frac{p}{d} = q + \frac{r}{d}$
    2. Notice that the Factor Theorem and Remainder Theorem is summarized in the Four Equivalent Statements Related to Real Zeros.

- Section 4.3: Real Zeros of Polynomial Functions
  - The Rational Zeros Theorem
    1. Use the Rational Zeros Theorem to list all possible rational zeros.
    2. Use output from a graphing utility to list all reasonable choices for rational zeros
    3. Determine all real and complex zeros

- Section 4.4: Complex Zeros and The Fundamental Theorem of Algebra
  - Fundamental Theorem of Algebra
  - Every polynomial function of degree n with real coefficients has exactly n complex zeros. (keep in mind that real numbers are complex numbers)
  - Complex zeros occur in conjugate pairs. (think of the quadratic formula)

- Section 4.5: Rational Functions
  - Definition
  - Domain
  - Zeros
  - x-intercepts
  - Vertical Asymptotes
  - Horizontal Asymptotes
  - Skip Oblique Asymptotes
  - Graphing

- Section 7.1: Matrices and Systems of Equations
    - Definitions   Omit Augmented Matrix
    - Elementary Row Operations

- Section 7.2: Algebra of Matrices
    - Definitions
        1. Equality
        2. Addition
        3. Opposite
        4. Zero Matrix
        5. Scalar
        6. Scalar Multiplication
        7. Multiplication
        8. Identity Matrices

- Section 7.3   Inverses of Square Matrices and Matrix Equations
    - Definitions
        1. Inverse of a matrix
        2. Coefficient matrix
        3. Variable matrix
        4. Constant matrix

    - Calculations
        1. Write the matrix equation which is equivalent to a given system of equations and visa-versa
        2. Calculate the inverse of a 2 X 2 square matrix
        3. Specify the steps to find the inverse of a square matrix.
        4. Perform row operations on a square matrix.
        5. Use matrix methods to solve a system of equations

- Section 7.4   Determinant of a Square Matrix
    - Definitions
    - Calculate the determinant of a 2 X 2 matrix.

Finally, if I have failed to list some topic included in the listed sections of the text or essays on the website they are hereby included as topics for this test.