

MATH 1700 ALGEBRA FOR TECHNOLOGY

3 Credits

Offered in Lab or Lecture Format

**Prerequisite required (MATH 0600 with a grade of C or better
or Appropriate Placement-Test Score)**

Revised 02/08/96

SYLLABUS

I. REVIEW OF FUNDAMENTAL CONCEPTS

- A. Techniques for solving linear equations
- B. Solving formulas for a specified variable
- C. Word problems

II. ALGEBRAIC FRACTIONS

- A. Multiplication and division of fractions
- B. Addition and subtraction of fractions
- C. Equations involving fractions

III. RADICALS

- A. Examples of radicals
- B. Removing all perfect nth powers from the radicand of a radical of order n
- C. Operations with radicals
 1. ${}^n\sqrt{a^n} = ({}^n\sqrt{a})^n = a$
 2. $({}^n\sqrt{a})({}^n\sqrt{b}) = {}^n\sqrt{ab}$
 3. $\frac{{}^n\sqrt{a}}{{}^n\sqrt{b}} = {}^n\sqrt{\frac{a}{b}}$
- D. Rationalizing denominators (including conjugates)
- E. Equations with square-root radicals

IV. RATIONAL EXPONENTS

- A. Non-negative integral exponents
- B. Zero and negative-integral exponents
- C. Fractional exponents
- D. Operations with exponents
 1. $a^m \cdot a^n = a^{m+n}$
 2. $\frac{a^m}{a^n} = a^{m-n}$
 3. $(a^m)^n = a^{mn}$
 4.
 5. $\left(\frac{a^n}{b}\right) = \frac{a^n}{b^n}$

E. Converting from radical form to exponential form

1. $\sqrt[n]{a^m} = a^{m/n}$

2.

V. LINEAR EQUATIONS

- A. Distance between two points
- B. Slope of a line
- C. Parallel lines
- D. Perpendicular lines
- E. Determining the equation of a straight line
 - 1. Slope-intercept
 - *2. Point-slope
 - 3. Vertical lines
 - 4. Horizontal lines
- F. Graphing linear equations
 - 1. Plotting points
 - 2. Plotting intercepts
 - *3. Slope-intercept

VI. SYSTEMS OF TWO LINEAR EQUATIONS IN TWO VARIABLES

- A. Types of systems
 - 1. Unique solution
 - 2. No solution
 - 3. Infinite number of solutions
- B. Methods of solution
 - 1. Graphical
 - 2. Substitution
 - 3. Elimination by addition
 - 4. Cramer's rule
- C. Word problems

VII. SYSTEMS OF THREE LINEAR EQUATIONS IN THREE VARIABLES

- A. Types of systems
 - 1. Unique solution
 - 2. No solution
 - 3. Infinite number of solutions
- B. Methods of solution
 - 1. Elimination by addition
 - 2. Cramer's rule
- *C. Word Problems

VIII. QUADRATIC EQUATIONS

- A. Review of solving by factoring
- B. Solving by the quadratic formula

IX. LOGARITHMS

- A. Definition
- B. Base 10 logarithms of positive numbers
- C. Antilogarithms of numbers
- D. Laws of logarithms
 - 1. $\log(ab) = \log a + \log b$

2. $\log\left(\frac{a}{b}\right) = \log a - \log b$

3. $\log b^a = a \log b$

E. Solving for a specified variable using the laws of logarithms

*Optional