

Marshall University

College of Science

Mathematics Department

MTH 127: College Algebra – Expanded Version

MTH 130: College Algebra

Course catalog description

A brief but careful review of the main techniques of algebra. Polynomial, rational, exponential, and logarithmic functions. Graphs, equations and inequalities, sequences.

Credit hours

MTH 127: 5 hours

MTH 130: 3 hours

Prerequisites

- MTH 127: ACT Math 17 or equivalent, or C or better in MTH099, MTH102, or MTH 102B
- MTH 130: ACT Math 21

List of topics

- Solving equations in one variable of the following types:
- linear equations and inequalities, basic equations with absolute value
- quadratic equations with real solutions (factoring and quadratic formula only, no completing the square)
- equations with rational expressions
- equations with radicals
- equations with exponential and/or logarithmic expressions

Basic Functions

- definition of "function", "domain", and "range"
- graphing lines
- linear and quadratic functions and their applications
- identification of other common functions and their applications
- graphing functions with translation and reflection (no scaling)
- identifying symmetry in functions (even/odd)
- graphically determine where a function is increasing, decreasing, and constant
- composition of functions and inverse functions

Polynomial and Rational Functions

- polynomial long division (synthetic division is optional)
- remainder and factor theorems
- basic graph sketching including end behavior
- intermediate value theorem
- equations of asymptotes - vertical and horizontal (no oblique)

Exponential and logarithmic functions

- basic properties of exponential functions and their graphs
- basic properties of logarithmic functions and their graphs
- Applications of exponential and logarithmic functions (population growth, compound interest, laws of cooling, decibels, Richter scale, etc.)

Solving systems of linear equations in two variables using substitution and elimination

Learner Outcomes

- Identify and implement appropriate solution methods for single-variable equations
- Identify and graph standard algebraic functions
- Interpret graphs of functions
- Construct functions to model applications
- Communicate written mathematics using appropriate notation and explanation in English

Suggested textbooks

- Sisson, *College Algebra*, 2nd edition, ISBN 978-1-932628-29-6
- Sullivan, *College Algebra*, 9th edition, ISBN 978-0-321-71681-1

Last updated

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