

Objectives for College Algebra 9th edition by Michael Sullivan

Math 1050 Objectives for Test #1

- R6 Use synthetic division to find the quotient and remainder when dividing a polynomial, and to determine if a binomial is a factor of a given polynomial.
- 1.4 Solve equations which are quadratic in form.
- 2.2 Find the intercepts of the graph of an equation in two variables.
Identify symmetry with respect to the x-axis, y-axis, and origin from the graph of an equation.
Test an equation algebraically for symmetry with respect to the x-axis, y-axis, and origin.
- 2.4 Know and be able to graph the equations for Circles.
Work with Circles with center (h,k).
- 3.1 Graph equations in two variables.
Understand and use function notation.
Define the terms: function, domain, range.
Find the domain of a given function.
Understand and use the notation for operations on functions. Form the sum, difference, product, and quotient of two functions and determine the domain.
- 3.2 Use a graph to answer questions including: find intercepts, domain, range, evaluate...
- 3.3 Determine where a function is increasing, decreasing, or constant. Identify any local minima or maxima and where they occur.
Determine if a function is even, odd, or neither from the graph and algebraically.
- 3.4 Graph the “library of functions”
Graph piece-wise defined functions. Find function values, the domain and range.
- 3.5 Apply the transformations (also learned in the lab project.)
- 3.6 Construct mathematical models, determine their real world domain, use the model to analyze a problem.

Math 1050 Objectives for Test #2

- 4.3 Find the intercepts, vertex, axis of symmetry, and graph of a quadratic function.
- 4.4 Set up and solve maximum/minimum applications problems.
- 4.5 Solve quadratic inequalities
- 5.1 Find the zeros of a factored polynomial function, determine their multiplicity, and predict graph behavior at each root (crossing or touching the x-axis). Determine the power function which the graph resembles for large values of $|x|$. Determine the number of maximum turning points. Use all this information to sketch the graph.
Form a polynomial with given real zeros.
- 5.2 Find the domain, the intercepts, and the vertical, horizontal, and/or oblique asymptotes of a rational function.
- 5.3 Graph rational functions, including asymptotes and holes.
- 5.4 Solve polynomial and rational inequalities

For Polynomial Functions:

- 5.5 Determine whether $(x - c)$ is a factor using the Remainder and Factor Theorems.
Find all the possible rational zeros. Test for zeros using synthetic division. Use this information to solve polynomial equations and factor polynomials over the real numbers.
Understand the principle of the Intermediate Value Theorem.
- 5.6 Understand and use the Conjugate Pairs Theorem.
Find the remaining zeros if information about complex zeros is provided. Be able to write this function.
Find all the complex zeros (real and/or imaginary) and write the function in factored form.
Form a polynomial with given complex zeros.

Math 1050 Objectives for Test #3

- 6.1 Given two functions, form the composite function, evaluate the composite function, and find its domain.
- 6.2 Know the definition of a one-to-one function.
Find the inverse of a one-to-one function.
Find the domain and range of functions and their inverse functions.
Verify that two functions are inverses of one another.
- 6.3 Evaluate exponential expressions and functions.
Graph exponential functions using asymptotes and points, and also using transformations.
Identify intercepts, asymptotes, domain, and range from an exponential graph.
Solve exponential equations by getting equal bases.
Evaluate exponential functions in real world applications.
- 6.4 Rewrite an equation from logarithmic to exponential form or from exponential to logarithmic form.
Find the exact value of a logarithmic expression.
Graph a logarithmic function. Use graph to determine domain, range and vertical asymptote.
Algebraically find the domain of a logarithmic function.
Solve logarithmic and exponential equations.
Evaluate logarithmic functions in real world applications.
- 6.5 Know and use the properties of logarithms.
Use the change-of-base formula to evaluate logarithms with base different than e or 10.
- 6.6 Use properties of logarithms to solve logarithmic equations, including those consisting of multiple logarithms.
Use logarithms to solve exponential equations, including exponentials with different bases, and exponential equations in quadratic form.
- 6.7 Know and use the formulas for compound interest, including periodic and continuous compounding.
- 6.8 Solve problems involving exponential growth and decay, including population and radioactivity.

Math 1050 Objectives for Test #4

- 7.2 Know the standard form of a parabola and use it to graph the parabola, including finding vertex, focus, directrix, and endpoints of the Latus Rectum.
Find standard form of a parabola given its graph or information about its vertex, focus, etc.
Solved applied problems using Parabolas.
- 7.3 Know the standard form of an ellipse and use it to graph the ellipse, including finding vertices, foci, major and minor axes.
Find standard form of an ellipse given its graph or information about its vertices, foci, etc.
Solved applied problems using Ellipses.
- 7.4 Know the standard form of a hyperbola and use it to graph the hyperbola, including finding vertices, foci, and asymptotes.
Find standard form of a hyperbola given its graph or information about its vertices, foci, asymptotes, etc.
Solved applied problems using Hyperbolas.
- 8.2 Use matrix row operations to solve systems of linear equations.
Be able to tell how many solutions a system has by observing its augmented matrix in row echelon form.
- 8.3 Find the determinant of a 2 by 2 and a 3 by 3 matrix by hand.
Solve a system of equations using Cramer's Rule.
- 8.4 Add and subtract matrices or scalar multiples of matrices.
Multiply matrices.
Find the inverse of a square matrix by hand.
Solve matrix equations in the form $AX = B$ using the inverse of A .
- 8.5 Find the partial fraction decomposition of rational expressions in the form P/Q where
 - Q contains non-repeated linear factors
 - Q contains repeated linear factors
 - Q contains non-repeated quadratic factors

Math 1050 Additional material required for final:

- 9.1 Know the definition of a sequence.
Given a sequence, list the first few terms or given the first few terms, determine the n th term.
Understand recursively defined sequences.
Understand and use summation notation.
- 9.2 For arithmetic sequences, find the n th term and the sum of the first n terms.
Given two terms of an arithmetic sequence, find the first term and common difference.
Solve applications problems using sums of arithmetic sequences.
- 9.3 For geometric sequences, find the n th term and the sum of the first n terms.
Find the infinite sum of a geometric sequence.
Solve applications problems using sums of geometric sequences.