Rochester Community and Technical College:

Need Both:

MATH 1115: College Algebra
Credits: 3.0
This first college level algebra course. Topics include but are not limited to: Polynomials, Rational, Exponential, and Logarithmic functions and their inverses, solving and graphing higher order equations, optimization applications, methods of solving systems or equations, and conic sections.

Prerequisites:

Successful completion of MATH 0099 or MATH 0100 or equivalent with a grade of B of higher for either course or appropriate score on RCTC placement test. College level reading.

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MATH 1117: Precalculus
Credits: 4.0
This course is for students requiring further experience with advanced algebra. Topics include trigonometric function and their inverses, trigonometric identities and equations, applications of trigonometry, graphing and polar equations, conic sections, mathematical induction, sequences, series, and a review of many algebra topics.

Prerequisites:

Successful completion of MATH 1115 with a grade of B or better recommended or appropriate score on placement or ACT test. College level reading.

Winona State University:

Need Both:

MATH 115: College Algebra
Credits: 3.0
This course will give students a rigorous preparation in algebra. Topics include review of basic algebraic concepts; functions and graphs; polynomial, radical, rational, exponential and logarithmic functions; equations, inequalities, systems of equations and inequalities; and applications.

**Prerequisites:**

MATH 50 – Intermediate Algebra or mathematics placement.

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**MATH 120: Precalculus**

Credits: 4.0

A study of topics designed to give students the skills necessary for successful completion of Calculus I. Emphasis is on equation solving, symbolic/algebraic manipulation and graphing of rational, exponential, logarithmic and trigonometric functions.

**Prerequisites:**

Qualifying score on the mathematics placement exam or MATH 115 – College Algebra.

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**University of Minnesota Duluth:**

**Need Both:**

**Math 1005: College Algebra**

Credits: 5.0

Computer based, on site course with students working at a semi-self pace taking notes in a guided notebook and completing online homework while asking the instructor questions as needed. Course topics include basic concepts of solving equations and inequalities as well as an introduction to function concepts and graphing for polynomial, rational, logarithmic, and exponential functions.

**Prerequisites:**

Math ACT of 21 or higher or SSP 0103 or department consent.

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**Math 1160: Finite Mathematics and Introduction to Calculus**

Credits: 5.0

Elementary functions, matrices, graphical and algebraic methods for solving systems of linear equations and inequalities, introduction to linear programming, and abbreviated treatment of calculus with emphasis on business and social science applications.

**Prerequisites:**
Math ACT of 24 or higher or a grade of at least C in Math 1005 or department consent; if you have received credit for 1290 or 1296 or 1596, you will not receive credit for Math 1160

**University of Wisconsin Eau Claire:**

**Need Both:**

**MATH 109: Algebra for Calculus**

Credits: 4.0

Algebraic concepts, techniques, and applications including polynomial and rational expressions, linear and quadratic equations, complex numbers, inequalities, absolute value, functions and graphs, exponential and logarithmic functions, systems of equations and inequalities, and zeros of polynomials. This course is for students pursuing degree programs that require calculus.

**Prerequisites:**

A grade of C or above in Math 20 or two years of college-preparatory algebra and a suitable mathematics placement test score.

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**Math 112: Precalculus Mathematics**

Credits: 4.0

Prepares students to enter the Math 114, Math 215, Math 216 sequence. Includes absolute value; logarithmic, exponential, and trigonometric functions; inequalities; conic sections; complex numbers; and topics from theory of equations.

**Prerequisites:**

Math 108 or 109 or three years of above-average work in college-prep MATH and a suitable mathematics placement test score.

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**University of Minnesota Crookston, (generally offered online):**

**MATH 1031: College Algebra**

Credits: 3.0


**Prerequisites:**
MATH 1250: Precalculus
Credits: 3.0
Descriptive statistics, elementary probability, normal distribution, binomial distribution, confidence intervals, tests of hypotheses, correlation, regression, chi-square, ANOVA

Prerequisites:
0991 or ACT Math score of 20 or higher

Precalculus CLEP Test:
https://clep.collegeboard.org/exam/precalculus

Description of the Examination
The Precalculus examination assesses student mastery of skills and concepts required for success in a first-semester calculus course. A large portion of the exam is devoted to testing a student's understanding of functions and their properties. Many of the questions test a student's knowledge of specific properties of the following types of functions: linear, quadratic, absolute value, square root, polynomial, rational, exponential, logarithmic, trigonometric, inverse trigonometric, and piecewise-defined. Questions on the exam will present these types of functions symbolically, graphically, verbally, or in tabular form. A solid understanding of these types of functions is at the core of all precalculus courses, and it is a prerequisite for enrolling in calculus and other college-level mathematics courses.

The examination contains approximately 48 questions, in two sections, to be answered in 90 minutes. Any time candidates spend on tutorials and providing personal information is in addition to the actual testing time.

- Section 1: 25 questions, 50 minutes.
  The use of an online graphing calculator (non-CAS) is allowed for this section. Only some of the questions will require the use of the calculator.

- Section 2: 23 questions, 40 minutes.
  No calculator is allowed for this section.

Although most of the questions on the exam are multiple-choice, there are some questions that require students to enter a numerical answer.

Graphing Calculator
A graphing calculator is integrated into the exam software, and it is available to students during **Section 1** of the exam.

Only some of the questions actually require the graphing calculator. Students are expected to know how and when to make appropriate use of the calculator. The graphing calculator, together with brief video tutorials, is available to students as a free download for a 30-day trial period. **Students are expected to download the calculator and become familiar with its functionality prior to taking the exam.**

In order to answer some of the questions in the calculator section of the exam, students may be required to use the online graphing calculator in the following ways:

- Perform calculations (e.g., exponents, roots, trigonometric values, logarithms)
- Graph functions and analyze the graphs
- Find zeros of functions
- Find points of intersection of graphs of functions
- Find minima/maxima of functions
- Find numerical solutions to equations
- Generate a table of values for a function

**Knowledge and Skills Required**

Questions on the examination require candidates to demonstrate the following abilities in the approximate proportions indicated.

- Recalling factual knowledge and/or performing routine mathematical manipulation
- Solving problems that demonstrate comprehension of mathematical ideas and/or concepts
- Solving nonroutine problems or problems that require insight, ingenuity, or higher mental processes

The subject matter of the Precalculus examination is drawn from the following topics. The percentages next to the topics indicate the approximate percentage of exam questions on that topic.

<table>
<thead>
<tr>
<th>20%</th>
<th>Algebraic Expressions, Equations, and Inequalities</th>
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<tbody>
<tr>
<td></td>
<td>Ability to perform operations on algebraic expressions</td>
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<tr>
<td></td>
<td>Ability to solve equations and inequalities, including linear, quadratic, absolute value, polynomial, rational, radical, exponential, logarithmic, and trigonometric</td>
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</tbody>
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- Ability to solve systems of equations, including linear and nonlinear

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<tr>
<th>15%</th>
<th>Functions: Concept, Properties, and Operations</th>
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- Ability to demonstrate an understanding of the concept of a function, the general properties of functions (e.g., domain, range), function notation, and to perform symbolic operations with functions (e.g., evaluation, inverse functions)

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<th>30%</th>
<th>Representations of Functions: Symbolic, Graphical, and Tabular</th>
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- Ability to recognize and perform operations and transformations on functions presented symbolically, graphically, or in tabular form
- Ability to demonstrate an understanding of basic properties of functions and to recognize elementary functions (linear, quadratic, absolute value, square root, polynomial, rational, exponential, logarithmic, trigonometric, inverse trigonometric, and piecewise-defined functions) that are presented symbolically, graphically, or in tabular form

<table>
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<tr>
<th>10%</th>
<th>Analytic Geometry</th>
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- Ability to demonstrate an understanding of the analytic geometry of lines, circles, parabolas, ellipses, and hyperbolas

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<tr>
<th>15%</th>
<th>Trigonometry and its Applications*</th>
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- Ability to demonstrate an understanding of the basic trigonometric functions and their inverses and to apply the basic trigonometric ratios and identities (in right triangles and on the unit circle)
- Ability to apply trigonometry in various problem-solving contexts

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<th>10%</th>
<th>Functions as Models</th>
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- Ability to interpret and construct functions as models and to translate ideas among symbolic, graphical, tabular, and verbal representations of functions

* Note that trigonometry permeates most of the major topics and accounts for more than 15 percent of the exam. The actual proportion of exam questions that requires knowledge of either right triangle trigonometry or the properties of the trigonometric functions is approximately 30-40 percent.