1. **COURSE ID:** MATH 825   **TITLE:** Just-In-Time Support for Path to Calculus
   Units: 2.0 units **Hours/Semester:** 32.0-36.0 Lecture hours; and 64.0-72.0 Homework hours
   Method of Grading: Pass/No Pass Only
   Corequisite: MATH 225

2. **COURSE DESIGNATION:**
   Non-Degree Credit
   Transfer credit: none

3. **COURSE DESCRIPTIONS:**
   Catalog Description:
   > A review of the core prerequisite skills, competencies, and concepts needed in pre-calculus. Intended for majors in science, technology, engineering, and mathematics who are concurrently enrolled in MATH 225, Path to Calculus, at College of San Mateo. Topics include: a review of computational skills developed in intermediate algebra, factoring, operations on rational and radical expressions, absolute value equations and inequalities, exponential and logarithmic expressions and equations, functions including composition and inverses, an in-depth focus on quadratic functions, and a review of topics from geometry.

4. **STUDENT LEARNING OUTCOME(S) (SLO'S):**
   Upon successful completion of this course, a student will meet the following outcomes:
   1. Simplify or reorganize algebraic expressions
   2. Solve equations and inequalities using multiple representations
   3. Solve systems of two equations
   4. Graph a function and identify its defining elements (including domain and range)

5. **SPECIFIC INSTRUCTIONAL OBJECTIVES:**
   Upon successful completion of this course, a student will be able to:
   1. Simplify or reorganize expressions by: a. Performing operations on rational expressions b. Performing operations on radical expressions c. Applying properties of rational exponents d. Applying properties of logarithms
   2. Solve each of the following: a. Absolute value equations b. Quadratic equations 1. By extracting roots 2. By completing the square 3. Using the quadratic formula c. Rational equations d. Radical equations e. Exponential equations f. Logarithmic equations
   3. Solve systems of two equations a. Algebraically b. Using a graphing calculator
   4. Solve and interpret the solutions of application problems
   5. F. Simplify or reorganize functions given a a. Sum b. Difference c. Product d. Quotient e. Composition of two functions
   6. Inspect and analyze a graph in order to: a. Determine whether the graph represents a function or is a 1-to-1 function b. Evaluate the function c. Determine the domain and range of a function d. Determine the max or min of a quadratic function
   7. Find the domain and range of the following functions: a. Rational functions b. Polynomial functions c. Functions involving radicals

6. **COURSE CONTENT:**
   Lecture Content:
   - Graphing of linear, absolute value, quadratic functions
   - Writing equations from the graphs of linear and quadratic functions
   - Using graphic, numeric and analytic methods to solve linear, quadratic, and rational equations
   - Fundamental operations with exponents and radicals and solving equations with the same
   - Solving application problems
   - Linear systems of equations
   - Exponential and logarithmic functions, their graphs, their inverse relationship and applications
   - Essential vocabulary, properties, and characteristics of geometric objects
   - Applying formulas to evaluate perimeter, area, surface area and volume of geometric objects
     Topics related to Developing Effective Learning Skills
       - Study skills: for example, organization and time management, test preparation and test-taking skills

- Self-assessment: for example, using performance criteria to judge and improve one's own work, analyzing and correcting errors on one's test
- Use of resources: for example, strategies for identifying, utilizing, and evaluating the effectiveness of resources in improving one's own learning, e.g. peer study groups, computer resources, lab services

7. **REPRESENTATIVE METHODS OF INSTRUCTION:**
Typical methods of instruction may include:
   A. Lecture
   B. Activity
   C. Discussion

8. **REPRESENTATIVE ASSIGNMENTS**
Representative assignments in this course may include, but are not limited to the following:
Writing Assignments:
   Students will complete 1-3 sections of written exercises per week
Reading Assignments:
   Students will read 1-2 sections of the textbook per week

9. **REPRESENTATIVE METHODS OF EVALUATION**
Representative methods of evaluation may include:
   A. Class Participation
   B. Class Work
   C. Exams/Tests
   D. Group Projects
   E. Homework
   F. Quizzes

10. **REPRESENTATIVE TEXT(S):**
Possible textbooks include:
   A. Lippman and Rasmussen. *Pre-Calculus: an Investigation of Functions*, 2nd ed. Open Textbook Store, 2017
Other:
   A. Supplemental: Exploratory projects and classroom activities created by CSM faculty.

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Effective Term: Fall 2019
Course Originator: Christopher Walker