MATH 115 – Pre-Calculus (Course Outline)

Instructor: Hamed Moghaddam
Format: Online via Zoom
Schedule: Thursdays , 6:30 – 8:00 PM
Dates: September 11 – December 18, 2025 (15 week)
Fee: $60.00 per hour for private sessions, or $30.00 per hour for group sessions (25 total hours).
Contact: Please complete the registration form, after which we will send you a PayPal link for the total fee.

Course Description

This course is designed to prepare students for calculus by providing a thorough background in algebra, functions, exponential and logarithmic concepts, and trigonometry. Emphasis is on problem-solving, graphical understanding, and applications in mathematics, science, and related fields.

Course Objectives

- Strengthen algebraic skills and problem-solving techniques.
- Understand functions, domains, ranges, and transformations.
- Apply properties of polynomial, rational, exponential, and logarithmic functions.
- Develop a solid foundation in trigonometry and its applications.
- Prepare students for the study of calculus.

Weekly Schedule (15 Weeks)

Week	Date	Topic
1	Sept 11	Introduction & Review of Algebra Essentials
2	Sept 18	Inequalities: Linear, Quadratic, Absolute Value; Interval Notation

3	Sept 25	Functions: Domain, Range, Composition, Inverses; Graph Transformations
4	Oct 2	Quadratic Functions, Applications, Radical Equations
5	Oct 9	Polynomial Functions: Zeros, End Behavior, Graphing
6	Oct 16	Rational Functions: Asymptotes, Intercepts, Graphs
7	Oct 23	Exponential Functions: Properties, Growth & Decay Models
8	Oct 30	Logarithmic Functions: Laws, Solving Equations
9	Nov 6	Trigonometry Basics: Angles, Radians, Unit Circle, Right Triangles
10	Nov 13	Graphs of Trig Functions: Sine, Cosine, Tangent
11	Nov 20	Applications of Sinusoids; Inverse Trig Functions
12	Nov 27	Thanksgiving Week – No Class
13	Dec 4	Trig Identities: Reciprocal, Pythagorean, Even/Odd
14	Dec 11	Advanced Identities: Sum/Difference, Double-Angle, Half-Angle; Solving Trig Equations
15	Dec 18	Conic Sections Overview; Comprehensive Review

Textbook/Resources

• Required: Precalculus: Mathematics for Calculus, by Stewart, Redlin, and Watson, Custom 8th Edition, ISBN 9780357758830.
• Graphing calculator (TI-83 or equivalent) required.
• Supplemental worksheets and homework will be provided by the instructor.

Notes

This is an estimated course syllabus and is subject to adjustments based on the professor's syllabus. We will meet for 1.5 hours weekly, and before the professor's exam, we will have a 2-hour exam review session. Course content and pacing will be adjusted as necessary to align with the professor's requirements.