

# MATH 001 Precalculus

## MTWR 3:15pm – 5:15pm Reiss 281

### Summer 2019

**Instructor:** Jae Young Lee

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**Text:** *Precalculus: A Right Triangle Approach*, 5<sup>th</sup> Ed. by Beecher, Penna, and Bittinger (ISBN: 9780321969552)

**Course description:** This course reviews topics from high school algebra and trigonometry needed prior to the study of Calculus. It covers algebraic, graphical and numerical properties of functions, focusing on linear, quadratic, general polynomial, absolute value, rational, exponential, logarithmic, and trigonometric functions. Topics also include equations, inequalities, and complex numbers. Applications of mathematics to modeling real world situations are emphasized.

#### **Learning Objectives:**

1. Recognition of function model groups by name, equation, and general graph shape: quadratic, cubic, general polynomial, exponential, logarithmic, linear, rational, and trigonometric.
2. Vocabulary used to describe graphs: domain, range, increasing, decreasing, x-intercept, function zero, y-intercept, maximum, minimum, asymptote, vertical, horizontal, axis, scale, coordinates.
3. Real number line and solving inequalities to describe number sets on that line.
4. Develop a working knowledge of functions (linear, polynomial, exponential, logarithmic, and trigonometric) and brush up your algebraic skills in preparation for calculus.
5. To be able to find patterns, make generalizations and conjectures, and construct arguments to justify claims.
6. To improve your problem-solving abilities and intellectual self-sufficiency; that is, the ability to rely on your own mathematical understandings to deduce new facts and devise new methods to solve unfamiliar problems.
7. To be able to construct and apply mathematical models of more or less realistic situations: to identify the relevant quantities and the relationships among them, represent them algebraically, solve the resulting mathematical problem, and interpret the results in the context of the original situation.

#### **Course Organization and Assignments:**

1. Lectures & In-Class Work – Class time will largely be devoted to either lectures covering the material from the required text or group work on challenging problems. It is expected that you will attend every class. Attendance will be taken and students who are absent will not be able to receive credit for in-class work completed during their absence. Should circumstances necessitate your absence, it is your responsibility to communicate with your instructor and to take all necessary action to stay current with the course.
2. Homework – Homework assignments will be due approximately once a week, typically on Mondays.
3. Quizzes – Quizzes will be given approximately twice a week. Students must be present in class to take the quizzes and no makeups will be given.
4. Exams – There will be two in-class exams and one final exam. Midterm exams will cover all the material from lectures, homework, and in-class work. The exact coverage for each midterm will be announced in advance of the exam. The final exam will be cumulative. For some exams, a formula sheet may be provided. The use of calculators, notes, or other reference materials during exams is prohibited. Students are expected to be present for all examinations. A student who misses an exam without a valid, documented excuse or prior approval of the instructor will receive a score of zero on that exam.
8. Website – Course materials (including this syllabus, homework assignments and due dates, and supplementary notes) will be posted to the course website on Canvas (<http://canvas.georgetown.edu>). Any announcements and updates will also be posted to this site.
9. Grading Scheme
  - Homework and In-Class Work – 15%
  - Quizzes – 15%
  - Midterm Exams – 40% (20% each)
  - Final Exam – 30%