GPS Math Camp 2020

August 10-13, 17-20, 4:00-5:00pm, Zoom

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Office Location: Zoom
Office Hours: Mon-Thurs 3:00-4:00pm

TAs:
Huizhong (Sonia) Tan [hut012@ucsd.edu], OH: Tu/Th 2:00-3:00pm
Ahmad Darweesh [adarwees@ucsd.edu], OH Mon/Wed 9:00-10:00pm
TA Session: 5:15-6:15pm Zoom

Course Description: This course is designed to give you the math skills necessary to be successful in the quantitative core courses you will take this year: Microeconomics, Quantitative Methods I, Finance and Accounting, Quantitative Methods II, and International Economics. We cover a lot of material very quickly, progressing from pre-algebra through multivariable calculus in 7 days. It is important that if you don't understand something, you go to TA sessions and office hours.

Each day there will be a 1-hour video lecture that you should watch prior to class that day (except for the first day of class). We will then have a 1-hour session with practice problems in class.

Please download Microsoft Word through your UCSD account. In-class exercises will require the use of shared Microsoft Word documents.

Special Circumstances: 2020 has been a difficult year for many of us, taking care of yourself is more important than any of the material in this (or any) course. Let me know if there are issues which arise which hinder your completion of assignments or the exam and I will work with you to reach a solution.

Prerequisite(s): Admission to GPS (Congratulations!).
Note(s): Your grade for this course is much less important than your understanding of the material.
Credit Hours: N/A
Text(s): None, but please check Canvas for course readings, lecture notes, and links to outside resources each of which will be posted daily.

Grade Composition:

Homework and Quizzes	50%
Final	50%

Course Policies:

- **General**

  - Please take notes by hand in class.
  - On quizzes and exams you may use one page of notes.

- **Assignments and Tests**

  - Students are expected to work independently. **Offering** and **accepting** solutions from others is an act of **plagiarism**, which is a serious offense and **all involved parties will be penalized according to the Academic Honesty Policy**. Discussion amongst students is encouraged, but the work and answers you show should be your own. When in doubt, direct your questions to the teacher or teaching assistants.
  - **Extensions on assignments will be granted upon request**.

- **Attendance and Absences**

  - Attendance will not be taken, but you are responsible for turning in a homework assignment by the start of each class.

Course Objectives:

At the completion of this course, students should be familiar with the following topics

1. Day 1 (August 10)

   (a) Order of operations
   (b) Fractions (addition, subtraction, multiplication, division)
   (c) Mathematical notation
   (d) Solving for x

2. Day 2 (August 11)

   (a) Basic Algebra

       i. Addition, subtraction, multiplication of linear and quadratic expressions
       ii. Solving linear equations
       iii. Graphing linear functions (slope, x and y intercepts)
       iv. Solving quadratic equations (quadratic formula)
       v. Applied maximization or minimization problems

   (b) Systems of Equations

       i. Graphical method (linear systems)
       ii. Substitution method
       iii. Elimination method

3. Day 3 (August 12)

   (a) Logarithms and Exponents

i. Laws of exponents
        ii. Laws of logarithms (base 10 and natural log)
    (b) Simple and compound interest

4. Day 4 (August 13)

    (a) Cost, revenue and profit functions
    (b) Demand and supply functions
        i. Graph and solve for equilibrium price and quantity
        ii. Solve through substitution or elimination
        iii. Graphically show consumer and producer surplus, solve for the values of those surpluses

5. Day 5-6 (August 17-18)

    (a) Basic Calculus
        i. Single variable
            A. First derivative and its interpretations
            B. Second derivative and its interpretations
            C. Elasticity and its interpretation
            D. Derivative rules
            E. Optimization problems using first derivative test
            F. Marginal cost, marginal revenue, marginal profit

6. Day 7 (August 19)

    (a) Multi-variable calculus
        i. First partial derivative and its interpretations
        ii. Second partial derivative and its interpretations
        iii. Constrained optimization problems

7. Day 8 (August 20)

    (a) Final Exam