



# 2022 Harris Math Camp

Math Camp Syllabus

## Week 1

### Day 1

- Why and what kind of math do we need for public policy analysis?
- Basic Algebra Review
  - Exponents, Fractions, Simplifying Expressions
- Linear Functions

### Day 2

- Graphing Linear Functions
  - More applications of linear functions
- Types of Functions
  - Quadratic Functions
  - Exponential and Logarithmic Functions

### Day 3

- Solving and graphing non-linear equations

### Day 4

- System of Equations (Graphing and Translating from English)
- Inverse and Piecewise Functions
  - Domain and Range

### Day 5

- Summation Notation
- Absolute Values and Inequalities



## Week 2

### Day 1

- Review of Week 1
- Introduction to Derivatives:
  - Graphical Examples
  - Product, Quotient Rules

### Day 2

- Chain Rule
- Partial Derivatives
- Interpreting Derivatives with Applications

### Day 3

- Unconstrained Optimization
- First and Second Order Conditions

### Day 4

- Optimization Word Problems
  - Application: Profit Maximization
  - Application: Cost Minimization



## Week 3

### Day 1

- Review of Unconstrained Optimization
- Modeling Constraint Equations
  - Graphing Constraint Equations
- Intro to Constrained Optimization

### Day 2

- Constrained Optimization
  - Substitution Method only
- Applications of Constrained Optimization

### Day 3

- Integration
  - Definite and Indefinite Integration
- U-Substitution

### Day 4

- Applications of Integration
- Review of Calculus Concepts

### Day 5

- Final Review