Exam 1 Topics

Chapter A: Calculus Appendix

• Functions
  ◦ Inverse function

• Properties of functions
  ◦ Monotonicity
  ◦ Concavity and Convexity
  ◦ Homogeneity of Degree t

• Derivatives
  ◦ Basic rules for differentiation
  ◦ Functions of more than one variable (partial derivatives)

• Optimization
  ◦ Existence of extreme values
  ◦ Uniqueness of extreme values
  ◦ Univariate vs multivariate optimization
  ◦ Unconstrained vs constrained optimization - Lagrange's method

Chapter 2: Demand and Supply Review

• Demand
  ◦ Demand curve
  ◦ Law of demand
  ◦ Movements along the demand curve
  ◦ Shifts in demand
    ◦ Factors that shift demand
  ◦ Demand function
  ◦ Demand aggregation

• Supply
  ◦ Supply curve
  ◦ Law of supply?
  ◦ Movements along the supply curve
  ◦ Shifts in supply
    ◦ Factors that shift supply
  ◦ Supply function
  ◦ Supply aggregation

• Market equilibrium

• Comparative statics
  ◦ Large changes
  ◦ Small changes

• Elasticities
  ◦ Price elasticity of demand
    ◦ Price elasticity of demand along the demand curve
  ◦ Income elasticity of demand
  ◦ Cross price elasticity of demand
  ◦ Price elasticity of supply
  ◦ Constant price elasticity of supply and demand example
• Elasticities and time horizon
  
  • Taxes
    ◦ 3 effects of a tax
    ◦ Per unit taxes
    ◦ Ad valorem taxes
    ◦ Tax incidence
      ▪ Connection to elasticity
  
  • Price controls
    ◦ Price ceiling
    ◦ Price floor

Chapter 3: Consumer Theory

• Basic components of consumer behavior
  
  • Preferences
    ◦ Ranking of bundles
    ◦ At least as good as relation
    ◦ Properties of preference relations
      ▪ Completeness, transitivity, more is better, prefer averages to extremes
    ◦ Preference maps
      ▪ Properties of preference maps and indifference curves (IC)
        ◦ Increasing, IC through every point, no crossing, downwards sloping, not thick, form convex sets
  
  • Utility
    ◦ Describes preferences with a function
    ◦ Ordinal not cardinal
    ◦ Properties of utility functions
    ◦ Indifference curves from utility
    ◦ Slope of indifference curve is MRS
    ◦ Define MRS as ratio of marginal utilities
    ◦ Types of preferences
      ▪ Perfect substitutes, convex, kinky, perfect complements
  
  • Budget Constraint
    ◦ What it is
    ◦ Equation
    ◦ Changes in income and prices
    ◦ Slope of budget constraint is MRT
    ◦ How taxes/subsidies/rationing change the budget constraint
      ▪ Income taxes/subsidies
      ▪ Good taxes/subsidies
      ▪ Per unit/ad valorem
  
  • Consumer's Problem
    ◦ Maximize utility subject to the budget constraint
    ◦ Two types of solutions
      ▪ Interior solution has MRS = MRT
        ◦ Use Lagrange's method
      ▪ Corner solution has consumption of one good = 0