

SECTION NOTES 5

Covering material from Lecture on January 26th

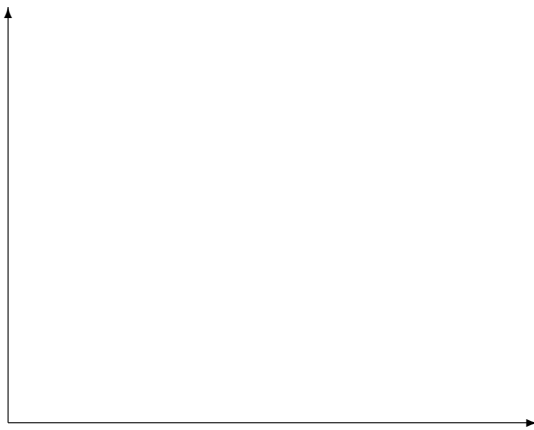
CLASS OUTLINE

1. The Optimal Bundle
2. Dissecting Marginal Rate of Substitution
3. Revealed Preference
4. Practice Problems Ch. 3.3-3.6, pg: 83-101

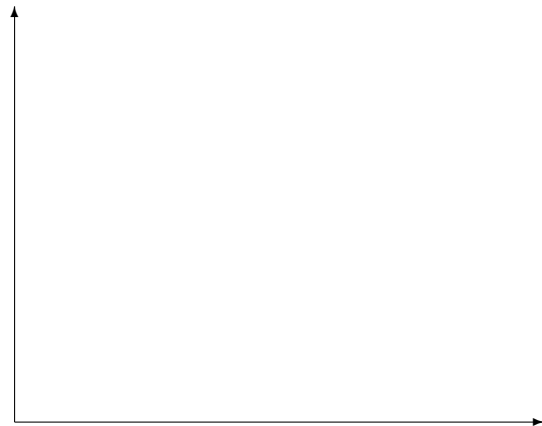
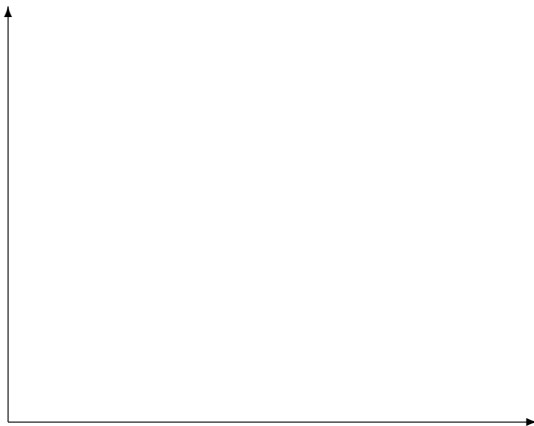
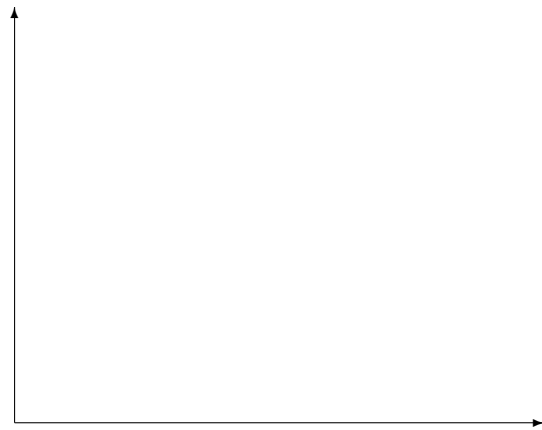
1 The Optimal Bundle

To help our intuition, we now look at optimal bundles with different types of preferences and a standard budget constraint. Remember our assumptions about consumer preferences and assume diminishing MRS for the top two graphs.

Diminishing MRS (internal solution)



Diminishing MRS (corner solution)



2 Dissecting Marginal Rate of Substitution

For the optimal bundles with diminishing MRS you should note the important graphical difference between those at “internal” versus “corner” solutions. Remember, indifference curves and MRS are determined entirely by the specific utility function in question. Let’s now look into that relationship more formally. We know that the marginal rate of substitution is determined by the amount of a good we are willing to give up for another good that would keep our utility constant, i.e. on the same indifference curve. Assuming $U(X, Y)$ is a utility function with diminishing MRS, how do we determine the MRS mathematically?

Notice, the MRS is literally the slope of the indifference curve at a certain consumption point. Look at the graphs again. Is there something you notice about the optimal bundle? This gives us a clear condition for any internal optimal point.

Condition:

The above condition is a single equation with two variables. However, we have another equation that has the same two variables: the Budget Line, or $P_X X + P_Y Y = I$, where P_X , P_Y , and I are known numbers. This gives us a system of equations with two equations and two unknowns \Rightarrow we can solve for the optimal bundle for internal solutions!

Now, how can we relate the above condition with corner solutions?

3 Practice Problems

Problem: (P&R Chapter 3, Exercise 15)

Jane receives utility from days spent traveling on vacation domestically (D) and in foreign countries (F). Her utility for trips is given by $u(D, F) = 10DF$. The prices of a day traveling domestically and in foreign is \$100 and \$400, respectively. Jane's annual travel budget is \$4000.

- a. Illustrate the indifference curve associated with a utility of 800 and the indifference curve associated with a utility of 1200.
- b. Graph Jane's budget line on the same graph.
- c. Find Jane's utility-maximizing choice of days spent traveling domestically and days spent in a foreign country.