

Recitation 2: 26 points

Name_____, Email_____, Section_____

1. Production Function and Total Cost Curve

- (1 point) Draw a production function with diminishing marginal returns.
- (1 point) Draw the resulting total cost curve due to diminishing marginal returns.
- (1 point) Fill in the following table and tell me at what quantity do we reach the efficient scale?

Quantity of Coffee	Total Cost	Fixed Cost	Variable Cost	Average Fixed Cost	Average Variable Cost	Average Total Cost	Marginal Cost
0	\$3.00	\$3.00	\$0.00	NA	NA	NA	NA
1	\$3.30	\$3.00	\$0.30	\$3.00	\$0.30	\$3.30	\$0.30
2	\$3.80	\$3.00	\$0.80	\$1.50	\$0.40	\$1.90	\$0.50
3	\$4.50	\$3.00	\$1.50	\$1.00	\$0.50	\$1.50	\$0.70
4	\$5.40	\$3.00	\$2.40	\$0.75	\$0.60	\$1.35	\$0.90
5		\$3.00	\$3.50				
6		\$3.00	\$4.80				
7		\$3.00	\$6.30				
8	\$11.00	\$3.00	\$8.00	\$0.38	\$1.00	\$1.38	\$1.70
9	\$12.90	\$3.00	\$9.90	\$0.33	\$1.10	\$1.43	\$1.90
10	\$15.00	\$3.00	\$12.00	\$0.30	\$1.20	\$1.50	\$2.10

2. Cost Curves for a Typical Firm

- a. (1 point) With prices on the vertical axis and quantity on the horizontal axis, draw and label the following curves: MC (marginal cost), AFC (average fixed cost), AVC (average variable costs), ATC (average total costs).
- b. (1 point) Show me the efficient scale.
- c. (1 point) Why is the Average Total Cost curve U-shaped?

3. Competitive Firm Simple Profit Maximization Problem:

- (1 point) Fill in the following table for a competitive firm and show me where the firm maximizes profit.
- (1 point) With prices on the vertical axis and quantity on the horizontal axis, show me a competitive firm with prices (draw in price level) that result in a short run profit using a Marginal Cost (MC) curve and Average Total Cost (ATC) curve, and shade in the area of profit.
- (1 point) Through a market supply and demand graph and a firm's cost and revenue graph (same axis and curves as "b."), show me how profits from an initial rightward shift in demand disappear in the long run.
- (1 point) With prices on the vertical axis and quantity on the horizontal axis, show me at what price level a competitive firm will shut down in the short run and at what price level they will exit in the long run using a Marginal Cost (MC) curve and Average Total Cost (ATC) curve and an Average Variable Cost (AVC) curve.

Quantity (gallons)	Total Revenue \$	Average Revenue	Total Cost \$	Profit \$	Marginal Revenue \$	Marginal Cost \$	Change in Profit \$
0	0	0	3	-3	NA	NA	NA
1	6	6	5				
2			8				
3			12				
4			17				
5			23				
6			30				

4. Monopoly:

- a. (1 point) With “Costs and Revenue” on the vertical axis and “Quantity” on the horizontal axis draw in the following curves for a Monopoly making a profit: Demand, Marginal Revenue, Average Total Cost and Marginal Cost (use constant upward slope for mc).
- b. (1 point) Now show me the profit maximizing price, the profit maximizing quantity, the area that represents profit and the area that represents dead-weight loss.
- c. (1 point) If the profit maximizing price and quantity for the monopoly is \$20 and 500 units and the average total cost is \$10, then what are the monopoly's profits?
- d. (1 point) If the profit maximizing marginal cost for the monopoly is \$15 and the quantity that would be produced if the market maximized economic welfare is 600 units, then what is the dead weight loss?

5. Monopolistic Competition:

- a. (1 point) With “Price” on the vertical axis and “Quantity” on the horizontal axis draw in the following curves for a monopolistically competitive firm earning a short run profit: Demand, Marginal Revenue, Average Total Cost and Marginal Cost. Be sure to label the price, quantity and Average Total Cost on the axes.
- b. (1 point) Now show me what happens to Demand and Marginal Revenue in the long run. Be sure to label the price, quantity and Average Total Cost on the axes.

6. Oligopoly:

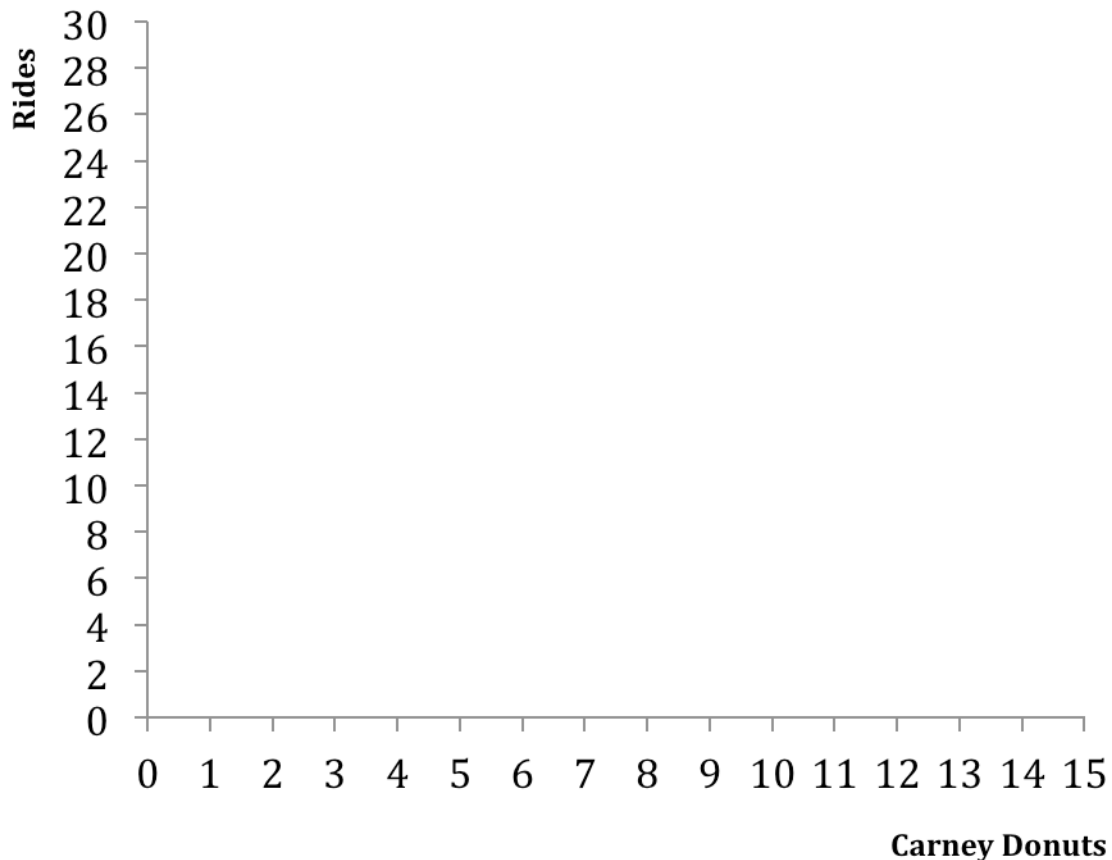
(1 point) Choose the Nash Equilibrium:

		<u>U.S. Decision</u>	
		Arm	Disarm
Soviet Union Decision	Arm	<div>U.S. at risk</div> <div>USSR at risk</div>	<div>U.S. at risk and weak</div> <div>USSR safe and powerful</div>
	Disarm	<div>US safe and powerful</div> <div>USSR at risk and weak</div>	<div>US safe</div> <div>USSR safe</div>

7. Budget Constraints and Indifference Curves:

Little Jimmy is headed to the carnival and his parents bought him 20 tickets to use as he pleases. There are two things little Jimmy can use his tickets on. He can go on rides for one ticket or get a delicious, deep-fried Carney Donut for two tickets. Both are normal goods.

- (1 point) Draw in the budget constraint and the corresponding indifference curve little Jimmy will be on. Label the optimum point "A." What is the marginal rate of substitution in terms of rides per donuts at this point?
- (1 point) Suppose the price of rides increases to two tickets. Draw in the new budget constraint.
- (1 point) Using the new budget constraint and the original indifference curve, show me the substitution effect and label that point "B."
- (1 point) With a new indifference curve, show me the income effect and label the point "C."
- (1 point) For your examples, does the substitution or income effect dominate for Carney Donuts?



8. Labor Supply:

- a. (1 point) With consumption on the vertical axis and hours of leisure on the horizontal axis, draw in a budget constraint and a corresponding indifference curve with the optimal point labeled "A."
- b. (1 point) Suppose wages increase. Draw in the new budget constraint and indifference curve with the income effect dominating for hours of leisure. Label this new optimum point "B."

9. Interest Rates and Consumption in Two Period Model:

- a. (1 point) With “consumption when old” on the vertical axis and “consumption when young” on the horizontal axis, draw in a budget constraint and a corresponding indifference curve with the optimal consumption bundle labeled “A.”
- b. (1 point) Suppose interest rates increase. Draw in the new budget constraint and indifference curve with the substitution effect dominating for “consumption when young.” Label this new optimum point “B.”