

This review sheet is intended to cover everything that could be on the exam. However, it is possible that I may have inadvertently overlooked something. You are still responsible for everything in the chapters covered except anything that I explicitly say you are not responsible for. Therefore, if I left something off of this sheet, it can still be on the exam. There will be no multiple-choice questions. Most of the questions will be like the ones on the homework assignments, and possibly a few definition questions. I am more likely to ask questions that make you use definitions rather than have you recite them. I will probably ask one of the questions from the book at the end of the chapters.

I expect that the review session for this class will be Sunday, 4/18, at 7:00, in Richardson 21 (not the normal room for class). The review for the final will be announced after its time is announced.

Chapter 8: What are the characteristics of perfect competition, monopoly, monopolistic competition, and oligopoly? **Why do all of these firms set $MR = MC$?** What is meant by imperfect competition? Be able to relate the industry supply and demand for a perfectly competitive industry to the demand for the firm. Why does $D = MR$ for that firm? Be able to find the output, price, total costs, total revenue, total profits or losses, and total variable costs from the ATC/AVC/MC/D/MR diagram. Hint: Find the ATC at the quantity produced **not** at the minimum of ATC. Be able show on both the firm and industry diagrams what happens if the profits are not zero. (Even though we imply the industry supply curve is horizontal in the long-run, it can be upward sloping; however, it takes time to prove that.) Be able to find exports or imports on the industry supply and demand diagram. Ignore the diagram for the exchange rate; however, know how to determine if the currency is getting stronger (appreciation) or weaker (depreciation) and how that affects the industry supply and demand diagram. Be able to find a monopoly's output, price, total costs, total revenue, total profits or losses (which should not exist), and total variable costs from the ATC/AVC/MC/D/MR diagram. Note that if you are drawing both long-run and short-run graph at the same time, a monopoly in the long-run equilibrium will produce where $SRMC = MR = LRMC$ and the $SRATC$ will be tangent to the $LRATC$ at that quantity. Be able to find consumer surplus, producer surplus, and deadweight loss on the diagram. Be able to draw the ATC/AVC/MC/D/MR diagram for a monopolistically competitive firm in the long-run and in the short-run. Know how it goes from the short-run to the long run for both short-run losses and short-run profits.

Chapter 9 up to page 373: What is meant by pure oligopoly (mostly what we will study) and a differentiated oligopoly? What is non-price competition? Be able to calculate the concentration ratios. Hint: Make sure the numbers are percent of industry sales, not volume of sales. If it is the latter, convert it to a percentage by dividing by the industry output. Be able to calculate the Herfindahl-Hirschman Index. Understand what range the index can take. Be able to derive the firms' *best response functions*, BRFs, for the Cournot-Nash model with constant marginal costs. The book does not do that, so I hope your notes are good. (Find the residual demand as a function of the other firm's output. Then find the MR for that demand curve. Set that equal to MC to find the Q. This will give the firm's output as a function of the other firm's output.) Use that to derive the firms' outputs and prices. Understand why the Bertrand-Nash model yields the perfectly competitive outputs and price for perfect substitutes. Why is the kinked demand curve kinked? How do we get the MR and output for the firm?

This is the non-graded assignment #8A that will be covered with assignment #8.

1) (40 points) Suppose that a Cournot duopoly has marginal costs of \$10/unit. The demand curve is given by $P = 70 - Q$. Draw a firm's residual demand, MC, and industry demand curves. Use these to find the two firms' best response functions. Explain how you got them and draw them. Find the industry's price and the two firm's outputs. Explain how you got them.

2A) (20 points) Draw the kinked demand curve. Find the firm's output and price. Explain why the curve looks as drawn, and how you got the quantity produced.

2B) (10 points) Given your graph in Part A, would this firm be likely to change its price if its cost

change? Why or why not?

3) (15 points) Why does the Bertrand model result in $P = MC$ for firms with identical products?

4) (15 points) Give an example of firm sizes where two industries would have the same CR4 and CR8 but have very different concentration of monopoly power. Explain how your example shows that.

Review sheet for the final:

Chapter 9 page 373 on: What is a cartel? Why does it usually fall apart? What is price leadership, a.k.a., a monopoly with a competitive fringe? Be able to find the equilibrium price and outputs for the firms. Ignore sections 9.3 on.

Chapter 10: What is game theory, strategies, payoffs, payoff matrix, players, and Nash Equilibrium? Why did I append “-Nash” to the Bertrand and Cournot models? Know how to find a dominant strategy, if it exists. Be able to find the cooperative equilibrium. What is the prisoners’ dilemma and why does it result in a Nash equilibrium that is not the cooperative equilibrium? How can we apply the Nash model to non-price competition? Do not worry about finding the equilibria for a repeated game, but understand why a repeated game may result in the cooperative equilibrium even if it is not a Nash equilibrium.

This non-graded assignment is written to give you an idea what the questions from the material after exam #4 could be like.

1) (30 points) Draw the industry and firm diagrams for a cartel that shows how the cartel chooses its output and why the cartel is likely to fall apart. Explain how your diagrams show what I asked for.

2) (30 points) Use the payoff matrix below to find the following, if they exist: each players’ dominant strategy, each players’ secure strategy, the Nash equilibrium, and the cooperative equilibrium. Briefly explain how you got each one and show all work. You may write on the matrix itself.

		Mustard Plug	
		High Price	Low Price
MU330	High Price	900 1250	920 980
	Medium Price	740 1280	750 600

3) (25 points) Draw the industry demand and firm demand for a dominant firm with a competitive fringe of a limited number of competitors. Find the firm’s output, the fringe output, industry output, and the industry price. Explain how you got each of them.

4) (15 points) Write a payoff matrix that has no Nash equilibrium. Prove it has no Nash equilibrium.