Don’t forget about Paper Homework #2!!! Expect a set of questions based on a table like the one in the homework. You’ll need to do some of the calculations, of course.

Total profit = Total Revenue – Total Cost
\[ \pi = TR - TC = P \cdot q - ATC \cdot q \]

Chapter 11 (C & T), 7 & 8 (G & T): Theory of the firm and perfect competition

Total cost = rents + wages + interest + NORMAL PROFIT; ECONOMIC profit is whatever (negative, zero, or positive) is left over from total revenue after all these are paid. Remember that implicit (pure opportunity) costs are included in total cost, e.g., rent you could receive for the use of the space in your office building that you choose to base your trash collection agency in.
Product curves. Here we model output as a function of variable inputs (labor). Diminishing returns occurs at the max point of the MP curve/pt. of inflection of the TP curve.

Short run cost curves. I’ve omitted AFC, but remember that, for any given level of q, you can find AFC as the vertical distance between the ATC and AVC curves, because

\[ AFC = ATC - AVC \]

MC takes its standard bowl shape due to diminishing returns, and gives the other curves their shapes. Pt. of dim. ret. is the minimum point (bottom) of the MC curve. Real firms always operate on the upward sloping section of the MC curve (and particularly, that portion which lies above the AVC curve—see the note on break even and shutdown below for an explanation).

MP-AC rule (where AC is either ATC or AVC):

- If \( MC > AC \) then \( AC \downarrow \)
- If \( MC = AC \) then \( AC \) constant
- If \( MC < AC \) then \( AC \uparrow \)

General rule: \( MC \) always tugs \( AC \) in its (MC’s) direction)

Long run average total cost curve. Here, the q variable is production capacity, not actual output, since long run decisions are about capacity. There are three segments to this stylized curve.

- Economies of scale: \( q \uparrow \rightarrow LRATC \downarrow \)
- Firms tend to increase in size

Constant returns to scale (CRS):

- \( q \uparrow \rightarrow LRATC \text{ constant} \)

 Diseconomies of scale:

- \( q \uparrow \rightarrow LRATC \uparrow \)
- Firms tend to shrink

We use this in our 3-panel diagram later
Perfect competition: know the characteristics:

- Large # small sellers
- Large # small buyers
- Homogeneous (identical) products — all firms produce the same stuff (think corn), so there can be no competition among firms based on product quality
- Therefore — all firms are price takers; market price applies to all firms; each firm can sell all it can produce at the going market price
- Costless entry into and exit from the industry for firms; this matters only for long run adjustment

Price and output (\(P\&q\)) determination:

1) Remember that the \(D\) and \(MR\) curves are two separate curves showing two distinct relationships (between \(P\&q\), and \(MR\) and \(q\), respectively) but that, in perfect comp., since firms are price takers, and do not have to cut price to sell more output, \(P = MR\), so the two curves coincide. 2) A firm in any market structure will \(\pi\) at the level of output at which \(MR = MC\); in perfect comp. only, that is the same as \(P = MC\).

Producing less than \(q_{\text{fr max}}\) means that some potentially profitable output is not being produced, i.e., money is being left on the table. Producing more means that some unprofitable (loss-making) output is being produced.

The 3 profit scenarios:

- \(\pi < 0\)
- \(\pi = 0\)
- \(\pi > 0\)

Breakeven and shutdown

Terms: Breakeven: zero profit; \(TR = TC\)  
Shutdown: Firm ceases production \((q = 0)\), but keeps ownership of fixed assets and remains in existence

Liquidation: The firm sells off all assets and ceases to exist.

Note that the firm’s supply curve consists of all the points on the (positively sloped part of the) \(MC\) curve above the \(AVC\) curve!

- Distinguish production and allocative efficiency (think of chocolate-covered anteaters)
- Also know the difference between economic and technological (or technical) efficiency

KNOW THE THREE-PANEL DIAGRAM FOR LONG-RUN ADJUSTMENT OF AN INDUSTRY TO AN INCREASE IN MARKET DEMAND!!!!!! Essay/graphing question on this.

\[\text{At } P_1 = q_1 > 0 \quad \text{Yay!}\]
\[P_2 = q_2 = 0 \quad \text{Breakeven}\]
\[P_3 = q_3 < 0 \quad \text{See below*}\]
\[P_4 = q_4 \text{ or } 0 < 0 \quad \text{Shutdown point; loss equals fixed cost}\]
\[P_5 = 0 < 0 \quad \text{Eek! Do not produce; loss exceeds fixed cost}\]

*At \(P_3\), you are earning negative profit, but your revenues are sufficient to cover all your variable costs and some fixed costs, so you are better off producing so that you don’t have to pay all your fixed costs of out of pocket.
Countries with lots of monopoly industries will tend to be poor (with a small wealthy class), because monopoly:
--- reduces output, which reduces consumption and increases unemployment
--- generates deadweight losses
--- concentrates income in the hands of a relatively small class

**Review the notes on the deadweight loss of monopoly.** Note that monopoly firms achieve neither production nor allocative efficiency

Chapter 14: (C & T), NA but see notes (G & T) Price discrimination
Just one multi-part essay question on this chapter:
 a. What is price discrimination? (Define and describe.)
 b. What is the goal of the price-discriminating firm? (Answer: to increase profit by capturing at least some consumer surplus for itself.)
 c. What are the three necessary conditions for a firm to price discriminate?
 d. What are the three degrees of price discrimination? List, describe, and give examples.
 e. Is it possible for consumers to benefit from price discrimination? Explain how this could occur. (Answer: Yes—see the airline ticket pricing example in the Notes.)

Capitalism and Freedom essay
--- Friedman argues that physicians should not be required to hold a license to practice in the US.
--- Summarize his argument. Carefully note the main points he makes.
--- State governments issue licenses to physicians, but what agency actually controls access to acquiring a license? Who actually regulates the supply of physicians, and for what purpose?
--- Who do you think should be the ultimate regulator of physicians, government or the market? Explain your reasoning.

You may refer to the reserve readings associated with this chapter in your answer if you find that helpful.
Chapter 15 (C & T), 10.2 (G & T). Oligopoly

- definition of oligopoly—an industry dominated by a few large firms
- types of oligopoly—either homogeneous goods (steel, oil, coal) or heterogeneous (cars, software, beer)
- key characteristic: strategic interdependence among rival firms. A firm must consider the effects of its rivals reactions to any action it might take.
- measures of oligopoly, e.g., concentration index
- cartels—what they are, why they form, why cartel members have an incentive to cheat, and why this sometimes destroys the cartel; the “drug cartels” are not cartels, as firms in a cartel do not compete!
- Game theory models from the text and notes—be able to work through problems like the ones we did in class—duopoly model, low-price guarantees. Expect a few questions on this.
- Insecure monopolist and entry deterrence game
- Contestable markets

General notes

-2 essays:
  --one on Capitalism and Freedom; see that page on the website for the two study questions

  --one on the 3 panel diagram (perfect competition). I’ll give you a diagram showing the initial equilibrium situation, with all the curves drawn, but with none of the curves nor axes labeled. You have to label them. Then, show how the market responds to an increase in demand for the product in the short run and in the long run. Then, write a paragraph, or two, or more, describing the process you have just depicted. Don’t be stingy with words. Explain fully.