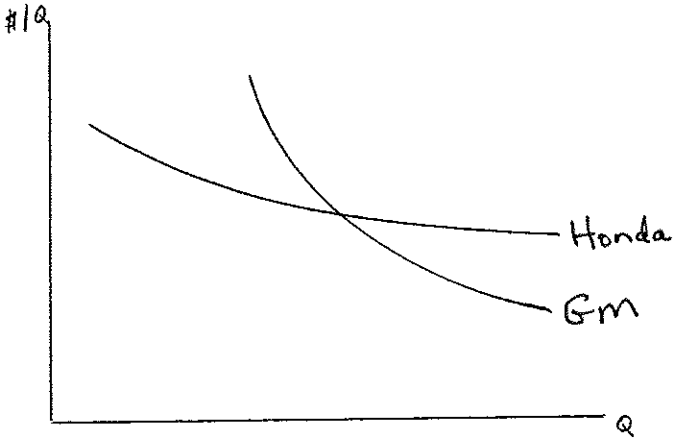
MBA 603 Exam
September 2011

Name: KEY

100 points total. Answer each question in the space provided. General advice: show your work, including any formulas or diagrams that you use in reasoning through your answers.

1. (10 pts.) Honda has taken a different approach in designing its East Liberty, Ohio plant than General Motors has in its Lordstown, Ohio production facility. The diagram below represents the LRAC curves associated with the two different plants. Which represents Honda's approach and which represents GM's approach? Explain why each LRAC is shaped as it is.



Honda has designed its plant so that it is very flexible, with low set-up costs for switching from one model to another. GM's plant is designed to produce one specific model. Switching from one model to another involves large set-up costs, which means that production runs must be very long in order to attain minimum costs.

2. (9 pts.) Economists have estimated income elasticities for milk, restaurant meals, and flour. The numbers they have come up with are 1.41, -0.36, and 0.07 (**not** in the order of the products listed previously!) Which number do you think goes with each product? Briefly explain why you think that.

Restaurant meals - 1.41 - eating out is a discretionary expense and increases more than proportionately with increases in household income.

Milk - 0.07 - very little variation in milk consumption as household income rises. Milk is a necessity.

Flour - -0.36 - as income rises, households bake from scratch less and instead purchase more prepared foods. Flour is an inferior good.

3. (6 pts.) If Q=3 then AFC=$33.33. If Q=4 then AVC=$75. If Q=5 then TC=$470. What is TC if Q=4? What is AVC if Q=5?

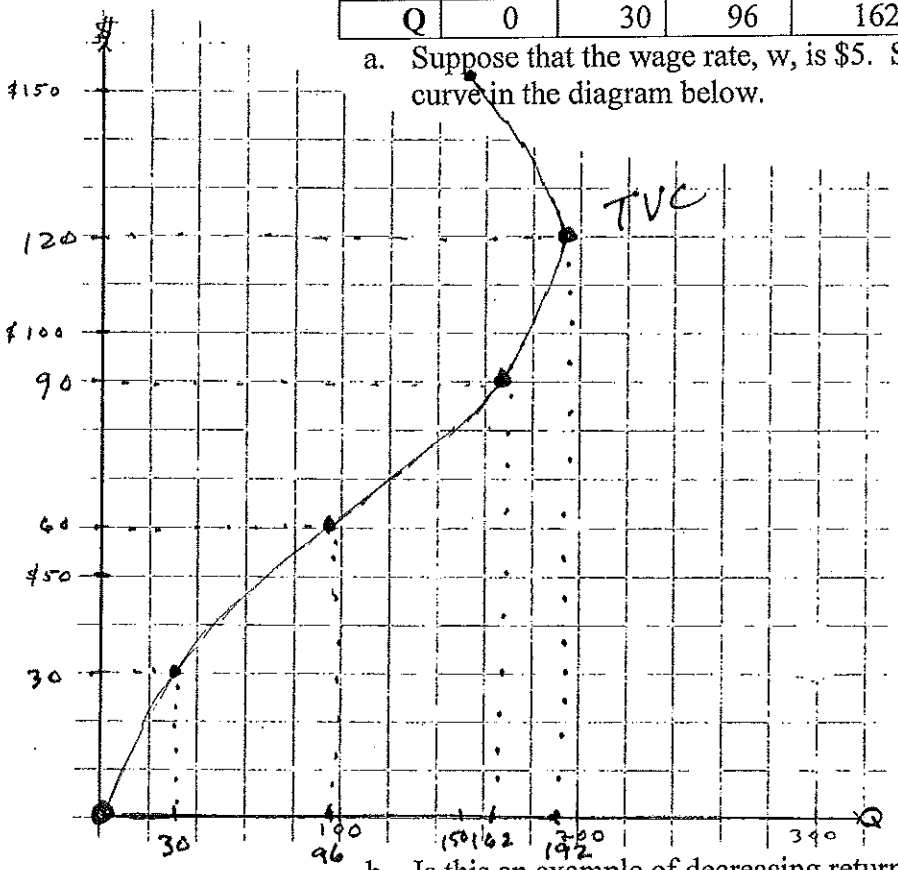
- if $Q=3$, $AFC=\$33.33$, so $TFC=\$100.00$
- if $Q=4$, $AVC=\$75$, so $TVC=\$300$ and $TC=\$400$ ($TVC+TFC=TC$)
- if $Q=5$, $TC=\$470$, so $TVC = TC - TFC = \$370$.

$\therefore AVC = 370/5 = \$74$

4. (15 pts.) The following table describes the short-run production relationship for a firm that produces a single output, Q, with two inputs, L and K:

K	24	24	24	24	24	24
L	0	6	12	18	24	30
Q	0	30	96	162	192	150

a. Suppose that the wage rate, w, is $5. Sketch the firm's total variable cost curve in the diagram below.



$Q = f(L, \bar{K})$

$TVC = w \cdot L$

Q	TVC
0	0
30	$30
96	$60
162	$90
192	$120
150	$150

note: you would never add workers beyond 24 because $MP_L < 0$.

b. Is this an example of decreasing returns to scale? Briefly explain why or why not.

"Returns to scale" refers to long-run production relationships, when all inputs are variable. This is a short-run example, and illustrates the law of eventually diminishing marginal returns.

5. (10 pts.) You own and operate a video rental store. Currently you charge $2 to rent a DVD for 24 hours, and on average rent 300 DVDs each day. Having experimented with price, you know that raising price by twenty-five cents causes rentals to fall by 50 per day, while lowering price by a quarter leads to an increase of 50 rentals per day. Calculate own-price elasticity of demand. Interpret the number that you have calculated, and recalling factors that affect own-price elasticity of demand, briefly explain why you might have gotten such an answer.

$$\varepsilon_{X,P_X} = \frac{\frac{\Delta Q}{Q}}{\frac{\Delta P}{P}} = \frac{\frac{50}{300}}{\frac{.25}{2}} = \frac{\frac{1}{6}}{\frac{1}{8}} = 1.33$$

$\varepsilon_{X,P_X} > 1$, so demand is elastic, i.e. consumers are relatively responsive to a price change.

One possible reason is that there are many substitutes available for video rentals, including pay per view, downloading from the internet, etc.

6. (10 pts.) Give an example of each of the four different types of relationship-specific assets.

- site specificity - Corning builds a factory to supply Sharp on Sharp's property.
- physical asset specificity - the amazing Krispy Kreme doughnut machine.
- human asset specificity - learning to use proprietary software that only your current employer uses.
- dedicated assets - a plastics manufacturer adds a production line that produces plates for one customer, but would not be used if that customer goes elsewhere.

7. (15 pts.) Your professor's younger sister owns and operates a sandwich shop in Fort Walton Beach, FL. The income statement for her business shows annual revenues of $150,000. Costs include wages for hourly employees ($35,000), utilities ($15,000), wholesale cost of food and other supplies ($40,000), taxes ($5,000), advertising ($5,000), and insurance ($5,000). She quit her job managing a similar business where she earned $25,000 per year, but she pays herself no salary in this business. She and her husband own the strip mall where her sandwich shop is located, and the space occupied by her shop previously rented for $12,000 per year. They have $40,000 invested in the business, which they could recover if they liquidated. They ask you to help them figure out the "rate of return" they are earning on their $40,000 that they have invested in the sandwich shop. Evaluate the economic profitability of their business.

TR = $150,000

Explicit Costs

hourly employees	35,000
utilities	15,000
wholesale supplies	40,000
taxes	5,000
advertising	5,000
insurance	5,000
	$105,000

Implicit Costs

foregone wages for proprietor	25,000
foregone rent on space	12,000
	$37,000

π = TR − Explicit Costs − Implicit Costs

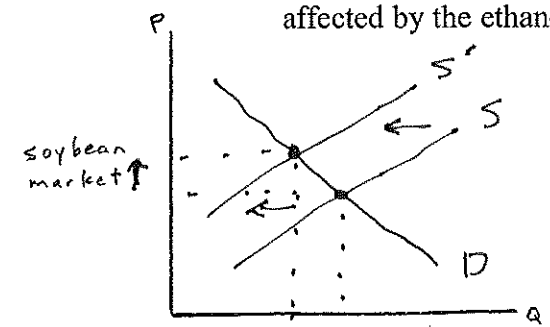
π = 150,000 − 105,000 − 37,000 = $8,000

They are earning $8000 each year on a $40,000 investment, or a 20% annual ROR. Not bad.

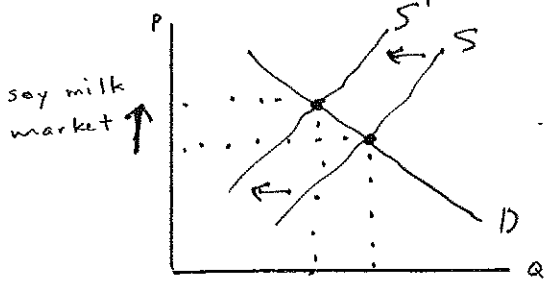
8. (5 pts.) For decades, Oracle Corp. and its CEO Larry Ellison pursued a horizontal strategy of providing business software to help companies run their operations more efficiently. Mr. Ellison and Oracle recently changed their strategy by acquiring another company. Whom did they acquire and what was the change in strategy?

Oracle, a software company acquired Sun Microsystems, a hardware company. Instead of only competing at one horizontal stage of production, they decided to vertically integrate.

9. (10 pts.) Soy milk is a popular substitute for cow's milk, especially for those who are lactose intolerant. The federal subsidy program for ethanol has increased the demand for corn and led to record high corn prices. Using supply and demand analysis, explain how higher corn prices affect the market for soybeans. Then explain how the market for a soybean-based product like soy milk is secondarily affected by the ethanol program. Illustrate your answers in the diagrams below.

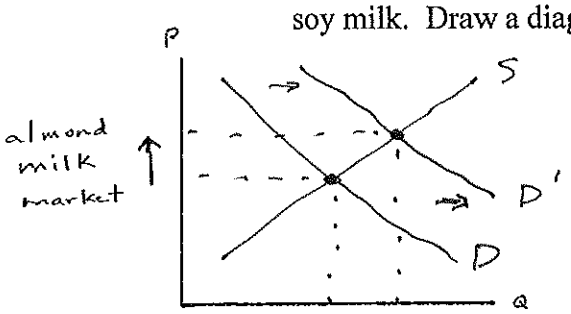


Since can plant either corn or soybeans, they are substitutes in production. An increase in corn prices will decrease the supply of soybeans, leading to higher prices.



Soybeans are a primary input in the production of soy milk. When soybean prices increase, the cost of manufacturing soy milk increases and the supply curve for soy milk shifts left.

(5 pts.) What do you think will happen to the stock price of Blue Diamond, a large almond producer that markets its own brand of almond milk, a close substitute for soy milk. Draw a diagram that supports your answer.



Soy milk and almond milk are close substitutes. When the price of soy milk goes up, demand for almond milk increases. Blue Diamond's profits rise.

10. (10 pts.) Toyota makes its own engines in a plant adjacent to the Camry assembly plant in Georgetown, KY. Toyota buys audio components from companies like Panasonic, JBL, and Bose. Explain why Toyota might pursue different make or buy strategies with engines than with audio equipment.

Engines - make, because of information asymmetries. The quality of the engines is difficult for a third party to ascertain, and so Toyota can solve this problem by making them itself.

Sound systems - Buy, because there are economies of scope (and perhaps scale) that Toyota would not be able to fully exploit just with its own need for sound systems for Toyota cars.