commerce undergraduate society

ECON 101

FINAL EXAM REVIEW SESSION

By Rachel Kim (Answer Key)

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1. Introduction to Economics

- **What is Economics?**
  - **Economics:** the social science that studies the choices that individuals, businesses, governments, and entire societies as they cope with scarcity
  - **Microeconomics:** the study of choices that individuals and businesses make, the way those choices interact in markets, and the influence of government.

- **Economic Way of Thinking**
  - Economic questions arise due to human's infinite desires and scarce resources.
  - Due to scarcity, we must make choices, depending on the incentives we face
    - **Scarcity:** our inability to satisfy our wants
    - **Incentives:** what motivates you to behave a certain way
  - Every choice is a trade-off; give up one to get another
  - Optimal choices for:
    - **Individuals**- satisfy personal desires
    - **Firms**- maximize profit
    - **Government-** maximize social welfare

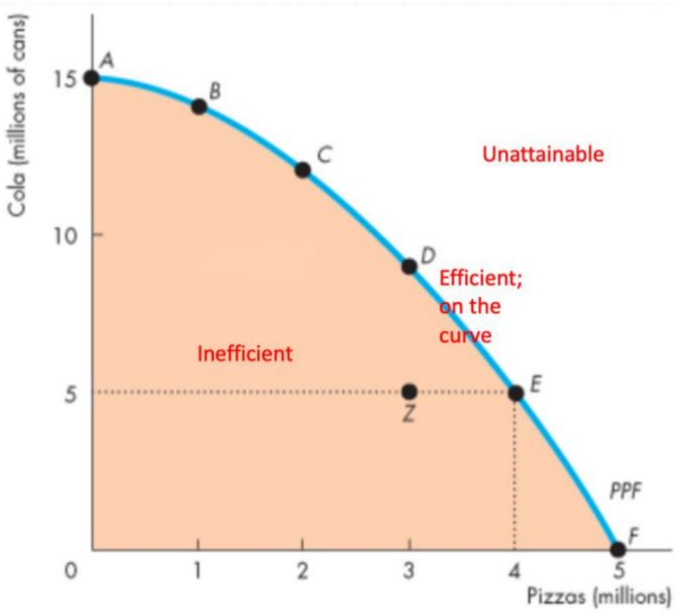
- Economic Questions
  - How do choices end up in determining: what to produce, how much to produce, and for whom to produce?
  - When do choices made in pursuit of self-interest also promote the social interest?

- **Economic Reasoning**: measure everything by cost and benefit
  - If **Marginal Benefit>Marginal Cost**, do it!
  - If **Marginal Benefit < Marginal Cost**, don't do it!

2. Economic Problem & PPF

- **Opportunity Cost (OC):** the cost of second-best alternative; the benefit forgone by undertaking that activity
    - OC of good x= (∆qty. y)/ (∆qty. x)

- **Production Possibilities Frontier (PPF):** represents the boundary between the combinations of goods/services that can be produced and that cannot.

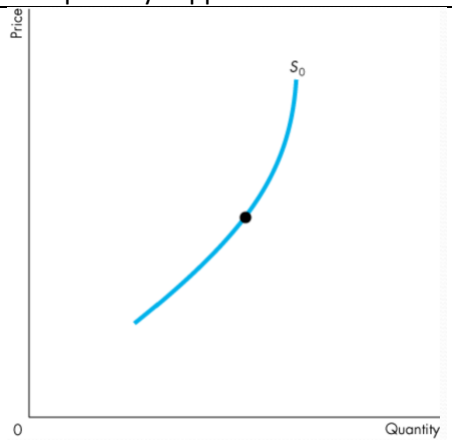
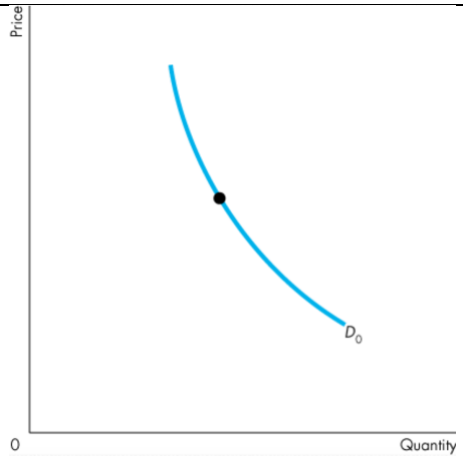


- **Allocative Efficiency**: when we cannot produce one more of any good that provides greater benefit
    - Where MB=MC

- **Absolute Advantage**: more productive than others
    - produce more in same time/material
    - produce same quantity with less time/material

- **Comparative Advantage:** perform an activity at a lower opportunity cost
    - supplier with comparative advantage should specialize in that area

3. Supply and Demand

	Supply	Demand
Key Terms	• **Quantity Supplied**: amount of goods/services that producers plan to sell during a given time period at a particular price • **Law of Supply**: Ceteris paribus, the higher the price of the good, the greater quantity supplied • **Supply:** the entire relationship between the price of good and quantity supplied	• **Quantity Demanded**: amount of goods/services that consumers plan to buy during a specific time and place • **Law of Demand**: Ceteris Paribus, the higher the price of the good, the smaller quantity demanded • **Demand:** the entire relationship between the price of goods and quantity demanded
Graph		
Shift Factors	• price of factors of production • price of related goods produced • expected future prices • technology • state of nature	• Price of related goods • Expected future prices • Income • Expected future income • population • personal preference

  - **Change in price**= shift along the curve
- Equilibrium
  - Where Supply=Demand
  - **Equilibrium price**: the price at which the quantity demanded equals quantity supplied
  - **Equilibrium quantity:** the quantity bought and sold at the equilibrium price

4. Elasticity

Elasticity	Price Elasticity of Demand	Price Elasticity of Supply	Cross Price Elasticity	Income Price Elasticity
Measuring	• Responsiveness of QD to a change in price	• Responsiveness of QS to a change in price	• Responsiveness of QD to a change in complementary/substitute good	• Responsiveness of QD to a change in consumer's income
Calculation	(% change in QD) / (% change in price)	(% change in QS) / (% change in price)	(% change in QD) / (% change in price of other good)	(% change in QD) / (% change in income)
	See below chart	See below chart	• positive→ substitutes • negative → compliments • zero→ unrelated goods	• >1 → normal good; income elastic • 0<income elasticity<1 → normal good, income inelastic • <0 → inferior good

- Elasticity measurement of Price Elasticity of Demand/Supply

Elasticity	Calculation	Explanation	Examples
Perfectly Elastic	Ed=undefined	When price of a good doesn't change despite the QD	• Highly situational/hypothetical
Elastic	Ed>1	If % change in QD is greater than % change in P	• Luxury goods
Unit Elastic	Ed=1	If % change in QD equals % change in P	• situational
Inelastic	Ed<1	If % change in P is greater than % change in QD	• Necessities
Perfectly Inelastic	Ed=0	If QD demand doesn't change despite the P	• Highly situational/hypothetical

- Elasticity and Total Revenue

Elasticity	When price increases
elastic demand	TR decreases
inelastic demand	TR increases
unit elastic demand	TR does not change

5. Efficiency, Equity & Government Intervention in the Market

- **Consumer Surplus**: excess benefit received from a good over the amount paid for it
  - Ex) When a buyer is willing to pay $10 for a good, but the market price is only $5
  - = Area under the demand curve & above price paid

- **Producer Surplus:** excess of the amount received from the sale of a good over the cost of producing it
  - Ex) When a seller receives $20 for a good worth $5
  - =area under the market price $ over the supply curve

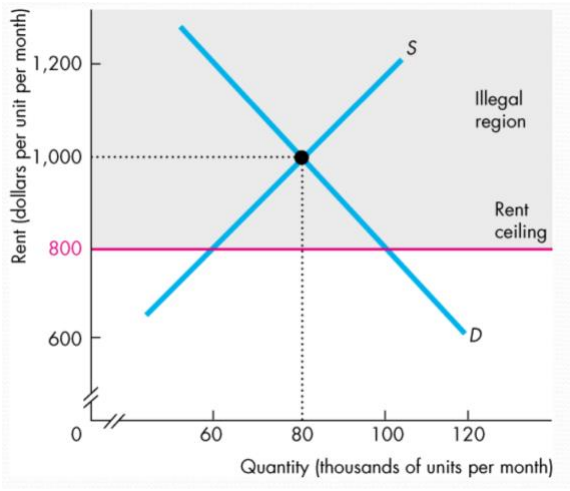
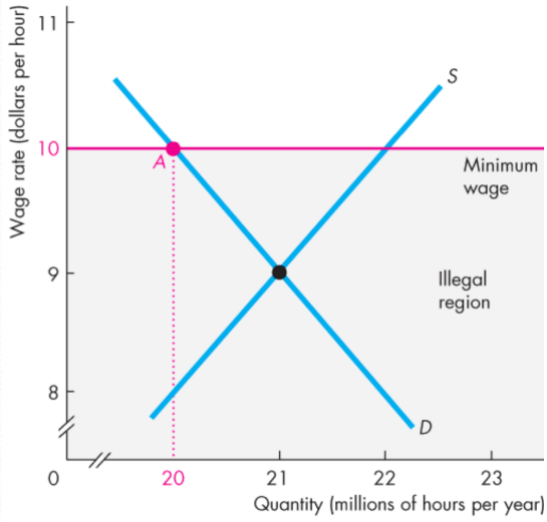
- **Market Efficiency:** Efficiency met at QD=QS, at market equilibrium
  - Consumer surplus is maximized.
  - Producer Surplus is maximized

- **Market failure:** when market delivers in inefficient outcome
  - Sources of market failure:
    - Price and quantity regulation
    - Taxes and subsidies
    - Externalities
    - Public goods and common resources
    - Monopoly
    - High transaction costs

  - Q: Give an example of negative externality. A negative externality results in: _____.
    - Ex: Smoking
    - Negative externality results in overproduction

  - Q2: A monopoly leads to (underproduction/overproduction). Explain why.
    - Monopoly leads to underproduction because monopoly only seeks to achieve self-interest goal, thus set a higher price. With higher price, supply is decreased.

- Government Intervention

Rent Ceiling	Rent Floor
	

• When government imposes maximum price of good
  ○ Ex: Rent control
• If rent ceiling $>equilibrium price: no effect
• If **rent ceiling $<equilibrium price**: DWL
	• When government imposes minimum price of good
	  ○ Ex: minimum wage
	• If rent floor $< equilibrium price: no effect
	• If **rent floor $> equilibrium price**: DWL

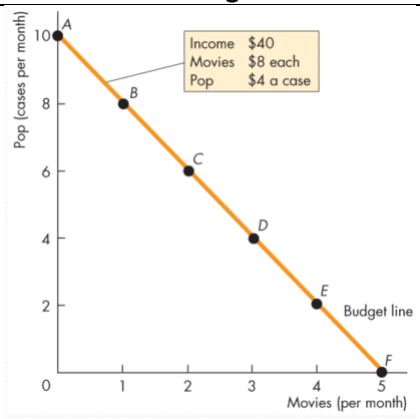
6. Utility and Demand

- Consumption Choices
  - **Consumption possibilities:** all things that you can afford to buy
    - Limited by income, price, and other factors
    - Consumption possibilities is limited when all income is spent
  - **Budget Line**: shows the limit of consumption possibilities
    - Any points on BL is affordable
  - **Real Income:** the income expressed as a quantity of goods that the household can afford to buy
    - **(Income)/(Price of good)**
  - **Relative Price:** the price of one good divided by the price of another good
    - The magnitude of the slope of the budget line
    - Relative price of good x, in terms of good y= (Px)/(Py)
  - Ex: Anna spends her entire income of $40 on movies and pop each month.

Consumption Possibility

Consumption possibility	Movies (per month)	Pop (cases per month)
A	0	10
B	1	8
C	2	6
D	3	4
E	4	2
F	5	0

Budget Line



- Q: What is her real income in terms of movies? In terms of pop?
- A: 5 movies, or 10 pop
- Q2: What is the relative price of movies? Of pop?
- A: Relative price of movie: 2 pop; relative price of pop: ½ movie

- Utility
  - **Preferences:** Consumer's likes and dislikes
  - **Utility:** benefit of satisfaction from consuming a good or services
    - Measured in 'utils'
  - **Total Utility:** the total benefit a person gets from the consumption of goods
  - **Marginal Utility:** the change in total utility that results from a unit-increase in the quantity of the good consumed

- Maximizing Utility
  - **Diminishing Marginal Utility:** as the quantity of good consumed increase, the marginal utility decreases
    - Total Utility increases at a decreasing rate

  - Ex 2: Rachel's Utility from eating Kit-Kat

Quantity consumed	Total Utility	Marginal Utility
0	0	(0→1) 10
1	10	(1→ 2) 9
2	19	(2 → 3) 7
3	26	(3 → 4) 5
4	31	(4 → 5) 2
5	33	(5 → 6) 0
6	33	(6 → 7) -2
7	31	(7 → 8) -4

  - Total Utility is maximized when Marginal Utility= 0

- **Utility Maximizing Choice**
  - Key assumption: everyone chooses the consumption possibility that **maximizes total utility**
  - Steps
    - Find Just-Affordable Combinations
    - Find the TU for each Just-Affordable Combinations
    - Determine the consumer equilibrium point

  - Ex 3: Terry has $40 budget to spend on movies and pop. Each movie costs $8 and each pop costs $4.
    - Find the Just-Affordable Combinations of movie and pop where Terry spends all $40.

Movie ($8)				Pop ($4)	
	Qm	TUm		TUp	Qp
A	0	0		260	10
B	1	50		248	8
C	2	90		225	6
D	3	122		183	4
E	4	150		123	2
F	5	176		0	0

- Find the TU for each Just-Affordable Combinations

Movie ($8)			**TU from movie and pop**	Pop ($4)	
	Qm	TUm		TUp	Qp
A	0	0	0+260= 260	260	10
B	1	50	50+248= 298	248	8
C	2	90	90+225= 315	225	6
D	3	122	122+183= 305	183	4
E	4	150	150+123= 273	123	2
F	5	176	176+0= 176	0	0

- **Consumer Equilibrium:** when all of available income is allocated in the way that maximizes total utility
    - Where is Terry's consumer equilibrium?
    - Combination C: TU= 315

- Finding Consumer Equilibrium
    - **Marginal Utility per dollar:** marginal utility from a good that results from spending one more dollar on it
        - Marginal Utility per dollar= (MUx)/(Px)
    - **Utility-Maximizing Rule:** a consumer's total utility is maximized by the following rule
        - Spend all available income
        - Equalize the MU per dollar for all goods (MUx/Px)= (MUy/Py)

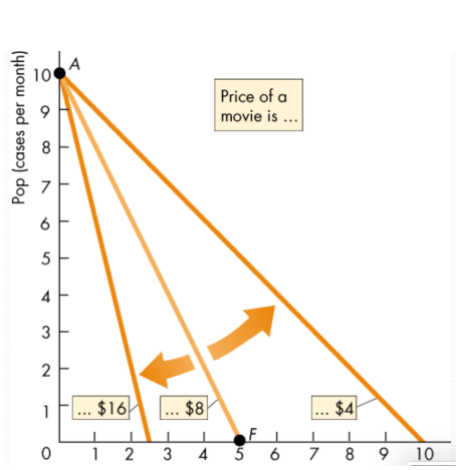
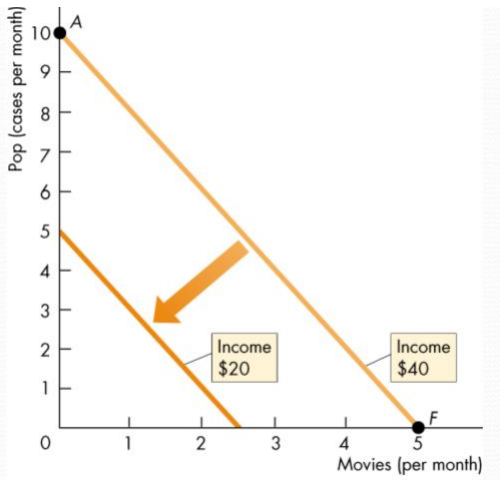
    - Ex 3 cont'd

Movie ($8)				Pop ($4)	
	Qm	MUm	MU/$	MUp	MUp/$
B	1	50	6.25	10	2.5
C	2	40	5	20	5
D	3	32	4	24	6

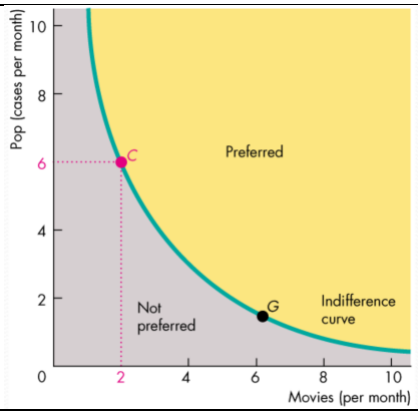
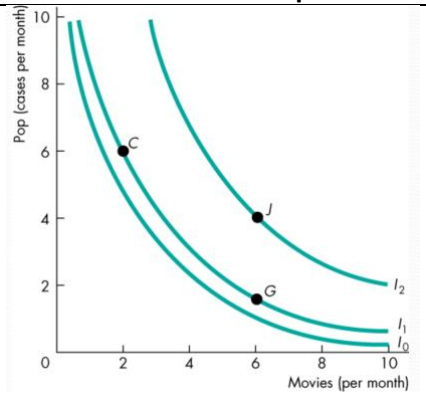
    - MU per dollar is equalized in combination C

7. Preference and Indifference Curve

- Shift Factors for Budget Line

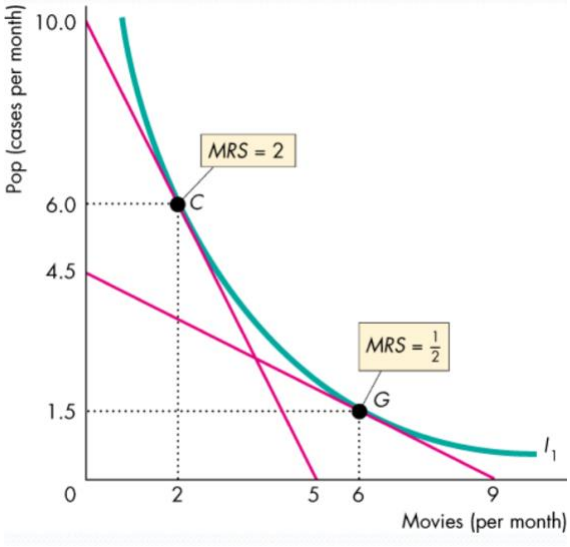
Change in Price	Change in Income
	
• Affects the slope of BL • Rotates BL • Relative price changes	• Does not affect the slope • Shifts the entire BL • Relative price does not change

- Indifference Curve
  - **Indifference Curve:** a line that shows combinations of goods among which a consumer is indifferent
    - All the points on and outside of the curve is preferred
  - **Preference Map:** a series of indifference curves
    - Indifference curves on the outside is preferred

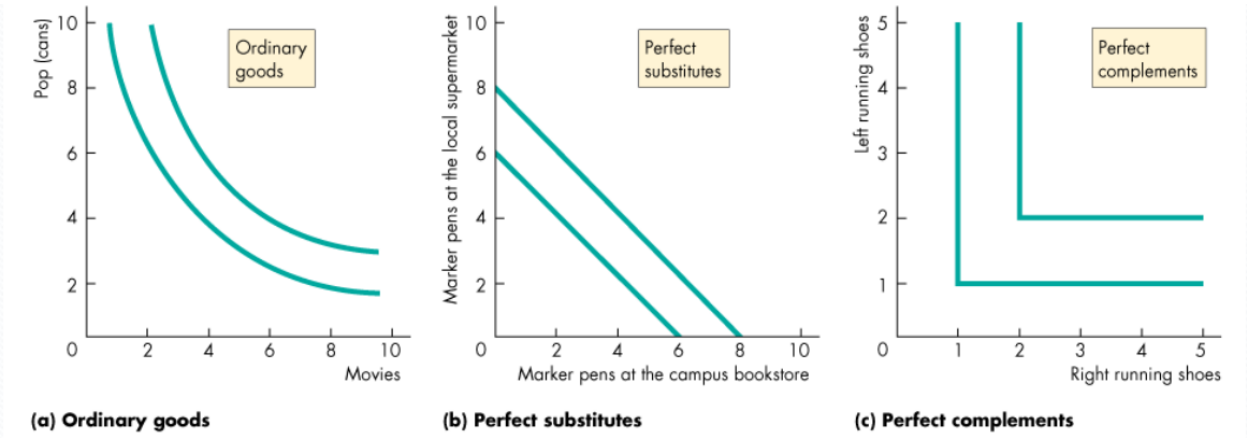
Indifference Curve	Preference Map
	

- **Marginal Rate of Substitution (MRS):** the rate at which a person is willing to give up good y to get an additional unit of good x, while at the same time remain indifferent
  - Slope of IC
  - Steep IC= High MRS= willing to give up a large qty. of y
  - Flat IC= Low MRS= willing to give small qty. of y

- **Diminishing MRS:** a general tendency for a person to be willing to give up less of good y to get one more unit of good x, as Qx consumed increases

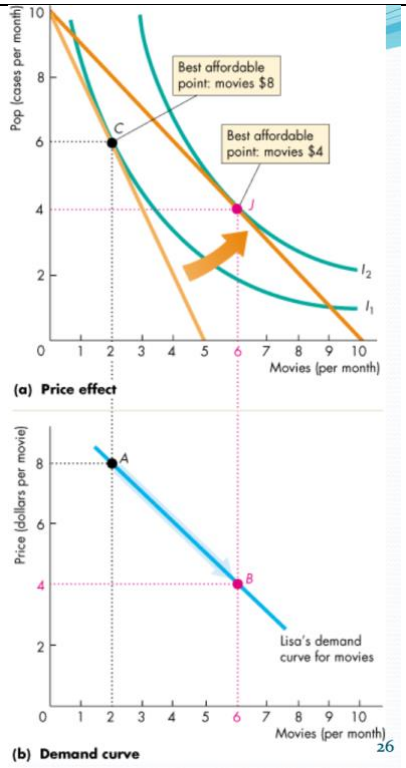
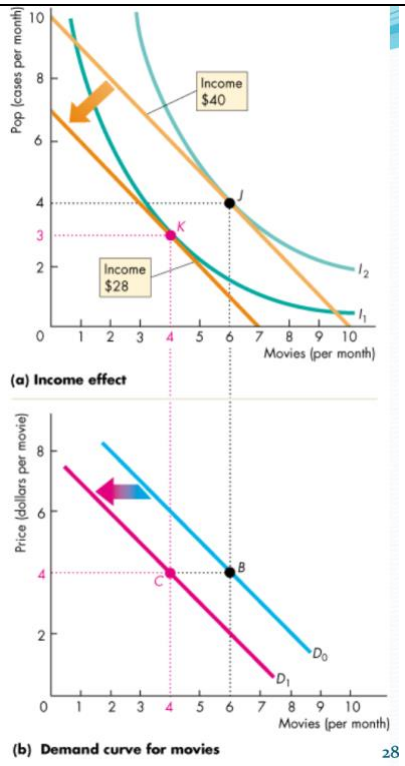


- **Degree of Substitutability:** the shape of indifference curves reveal the degree of substitutability between two goods



- **Best Affordable Choice**
  - On the budget line
  - On the highest attainable indifference curve
  - Has MRS between the two goods equal to the relative price of the two goods

- Price Effect & Income Effect

Price Effect	Income Effect
	
• How change in price of a good affects the quantity of good consumed • As price of one good decreases, demand for the good increase, budget line rotates to touch outer indifference curve	• How change in income affects the quantity of good consumed • As income decreases, budget line shifts inward, touching inner indifference curve

8. Output and Costs

- Time frame of decisions
  - Firms make many decisions to achieve their main objective: **profit maximization**
    - Some decisions are irreversible, others are easily reversed.

Short Run	Long Run
• Quantity of one or more resources used in production is fixed. • The capital, called the firm's plant, is fixed. • Decisions easily reversed.	• All resources are variable. • Decisions not easily reversible. • If plant has no resale value→ becomes sunk cost

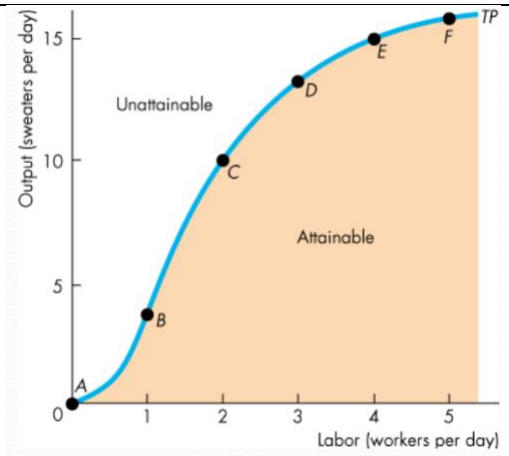
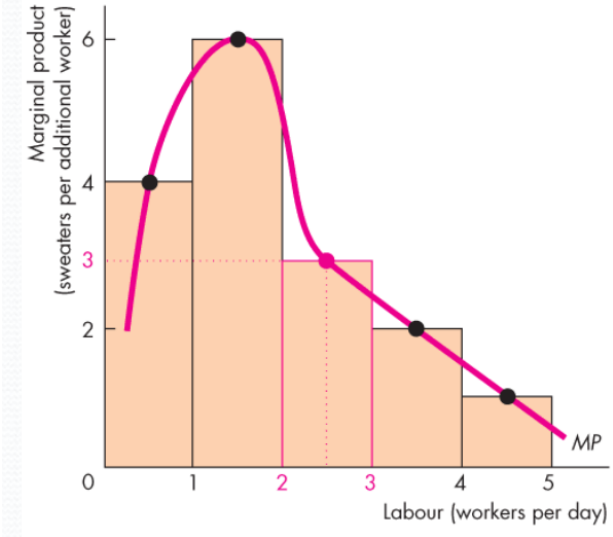
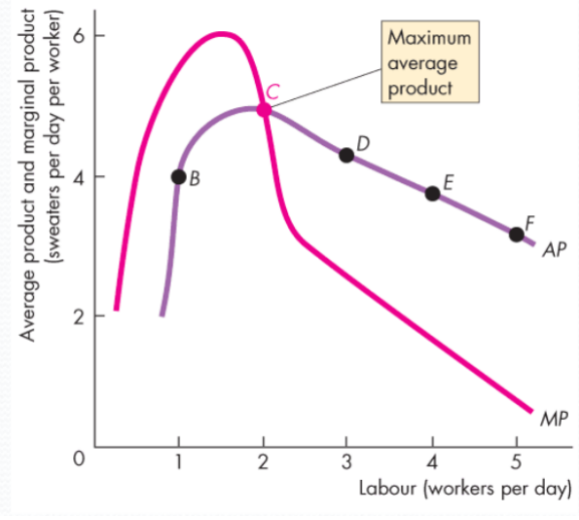
  - **Sunk cost**: a cost incurred by the firm and cannot be changed
    - Irrelevant to a firm's current decisions

- Product Schedules
  - **Total product (TP):** total output produced in a given period
  - **Marginal product of labour (MP):** the change in total product that results from a one-unit increase in the quantity of labour employed, with all other inputs remaining the same
  - **Average product of labour (AP):** Total product divided by the quantity of labour employed
    - AP= TP/L
  - **Product curves:** show how the firm's TP, MP, and AP change as the firm varies the quantity of labour employed

- Short-Run Cost Schedules
  - **Total Cost (TC):** cost of all resources used
    - TC= TFC+TVC
  - **Total Fixed Cost (TFC):** the cost of the firm's fixed inputs
  - **Total Variable Cost (TVC):** the cost of the firm's variable inputs
  - **Marginal Cost (MC):** the increase in total cost that results from a one-unit increase in total product
    - As MR increases, MC falls
    - As MR falls, MC increases
  - **Average Cost (AC):** cost per unit of output
  - **Average Total Cost (ATC):** total cost per unit of output
    - ATC= AFC+ AVC
  - **Average Fixed Cost (AFC):** Total fixed cost per unit of output
    - TFC/Q
  - **Average Variable Cost (AVC):** Total variable cost per unit of output
    - TVC/Q

- Short-Run Product
  - To increase output in the short-run: must increase the quantity of labour employed.
  - As the quantity of labour employed increases:
    - TP increases
    - MP increases initially, eventually decreases
    - AP increases initially, eventually decreases

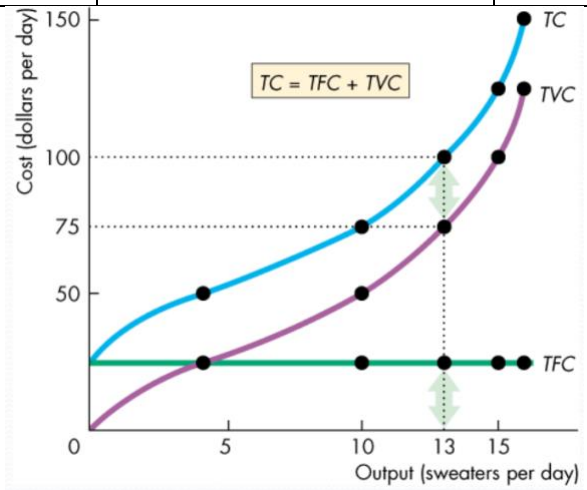
  - Short-Run Product Curves

Product Schedule	Total Product Curve
	
a table of schedule that shows the change in TP, MP, and AP as quantity of labour chagnes	Illustrates decreasing MP - Similar to PPF; unattainable outside the curve
Marginal product Curve	**Average Product Curve**
	
-Illustrates the **Law of Diminishing Returns**: as variable input increases with a given fixed input, marginal returns eventually decrease	-When MP>AP: AP increases -When MP<AP: AP decreases -When MP=AP: AP max.

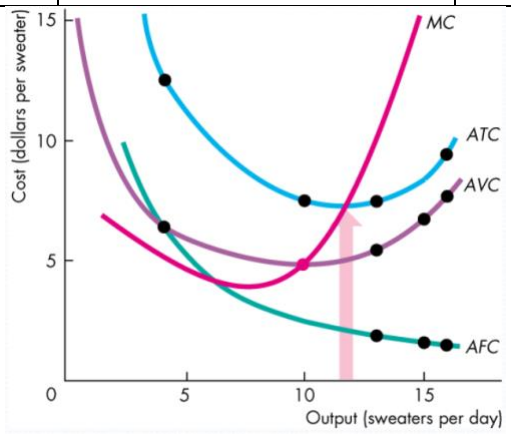
- Short-Run Cost
    - To produce more output in the short run: must employ more labour, thus increase its cost:
        - TFC: fixed; same at each output level
        - TVC: increases as output increases
        - TC: increases as output increases

    - Short-Run Cost Curves

TFC Curve	TVC Curve	TC Curve
-same at each level -horizontal line	-less steep at low output -steeper at high output	-same shape as TVC Curve -above TVC curve by the amount of TFC

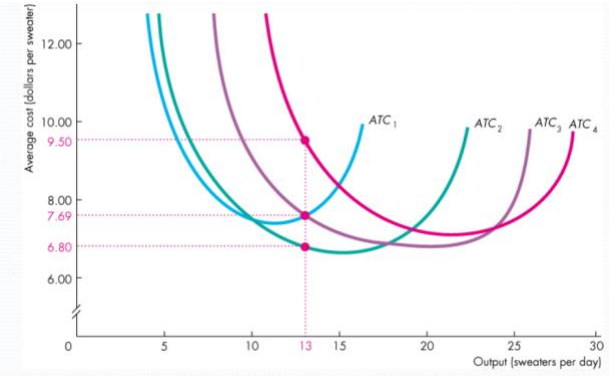


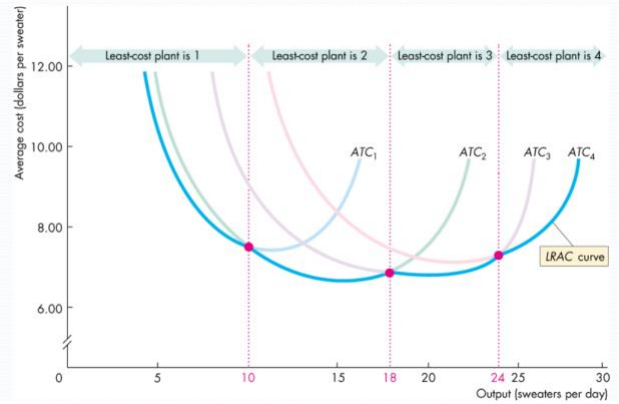
AFC Curve	AVC Curve	ATC Curve
-decreases as output increase	-U-shaped -If AVC>MC: AVC decreases -If AVC=MC: AVC min. -If AVC<MC: AVC increases	-U-shaped - If ATC>MC: ATC decreases - If ATC=MC: ATC min - If ATC<MC: ATC increases



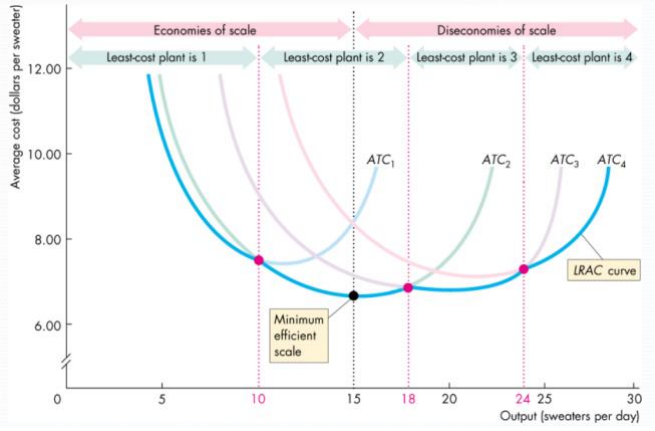
- Shifts in Cost Curves can be caused by:
  - Technology: increase productivity and decrease cost
  - Prices of factors of production:
    - Increase in fixed cost: TC and ATC shift upward
    - Increase in variable cost: TC, ATC, and MC shift upward

- Long Run Cost
  - In the long run, all firm's input and costs are variable.
  - Firm faces diminishing marginal product of capital.
    - **Marginal Product of Capital**: change in output resulting from a one-unit increase in the amount of capital employed, with constant amount of labour employed
  - Exhibits diminishing marginal returns to labour for each plant.
  - Exhibits diminishing marginal returns to capital





- Long Run- Economies and Diseconomies of Scale
  - **Economies of Scale:** features of a firm's technology that lead to falling long-run average cost as output increases
  - **Diseconomies of scale:** features of a firm's technology that lead to rising long-run average cost as output increases
  - **Constant returns of scale:** features of a firm's technology that lead to constant long-run average cost as output increases
  - **Minimum Efficient Scale:** the smallest quantity of output at which the long-run average cost reaches its lowest level



Q1: Profits are maximized at the output at which marginal cost equals marginal revenue. If the market price falls below the minimum average variable cost:

a. the firm should shut down.

b. the firm should produce more.

c. the firm should produce less.

d. None of the above.

Q2: As output increases, marginal cost will eventually:

a. increase because of the law of increasing returns

b. increase because of the law of diminishing returns.

c. decrease because of the law of diminishing returns.

d. decrease because of the law of increasing returns.

9. Perfect Competition

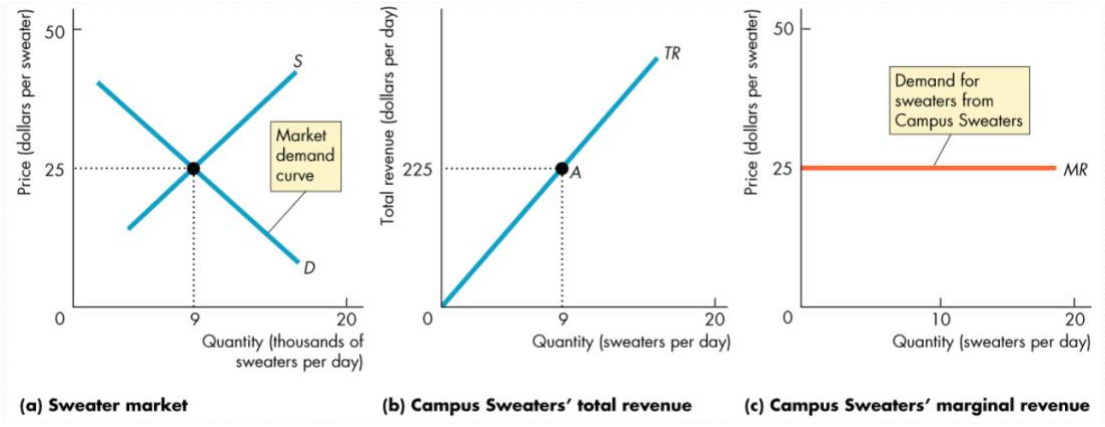
- **Characteristics:**
  - Many firms sell identical products to many buyers
  - No restrictions to entry into the industry
  - Established firms have no advantages over new ones
  - Sellers and buyers are well informed about prices
  - Each firm is a price taker
    - **Price taker**: firm that cannot influence the price of a good or service

- **Economic Profit and Revenue**
  - **Total Revenue=** (Price)*(Quantity)
  - **Marginal Revenue**= the change in total revenue that results from a one-unit increase in the quantity sold

  - In perfect competition, market equilibrium price= firm price= Marginal Revenue

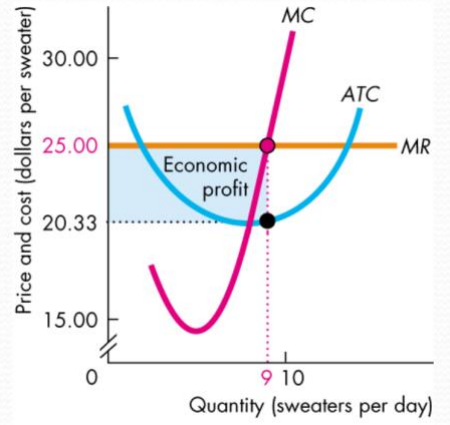
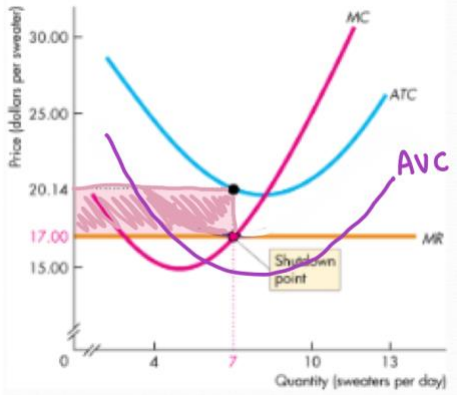
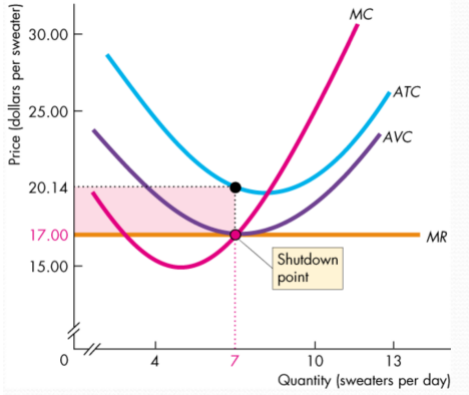
  - Firm's demand is perfectly elastic
    - Each firm's product is a perfect substitute

  - Market demand is not perfectly elastic!
    - It still has the shape of downward slope

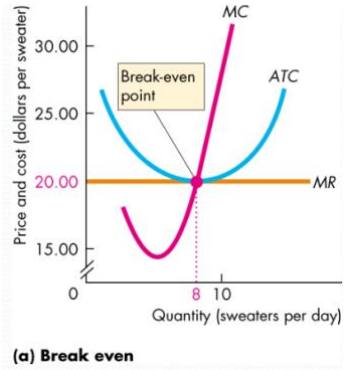


- **Firm's Output decision**
  - Firm must decide:
    - How to produce at min. cost
    - Qty. to produce
    - Whether to enter/exit a market

- In the short-run:

Economic Profit	Economic Loss	Classic-Shutdown Position
		
• Profit max @ MR=MC • Since ATC<MR, making more money than the cost	• AVC<MC<ATC • ATC>MR, loss is incurred • Firm can still cover AVC and some AFC **Loss= TFC+TVC-TR**	• MC<AVC<ATC • At MR=MC, firm can't cover ATC nor AVC • If firm shuts down, it can save AVC • Still needs to pay AFC

- In the long-run:
  - Equilibrium
    - AVC does not matter
    - ATC intersects with MC=MR
    - Breakeven
  - Short-run profit → long run equilibrium
    - As market becomes more profitable, price increases, then supply increase: Supply curve shits to the right
    - As supply curve shift, price falls: new equilibrium= new MR
    - ATC @ MR=MC
  - Short-run loss → long run equilibrium
    - As market becomes less profitable, suppliers leave market: supply curve shifts to the left
    - As supply curve shift, price rises: new MR
    - ATC @MR=MC



• Q: Which of the following is always true for a perfectly competitive firm?

A. P = MR
B. P = ATC
C. MR = ATC
D. P = AVC

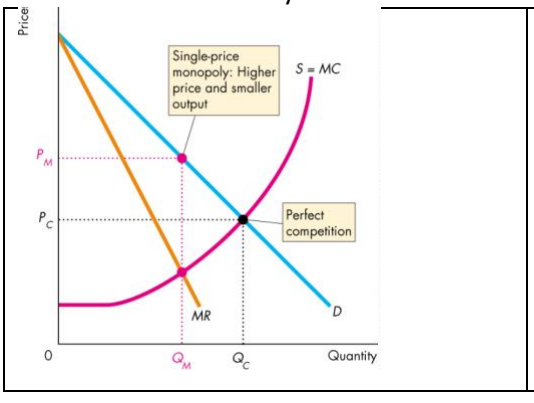
10. Monopoly

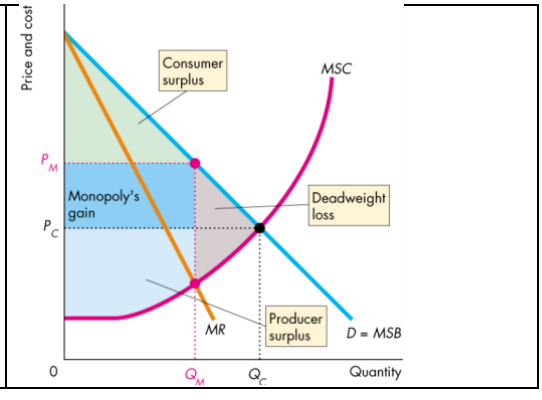
- **Key Characteristics**
  - A single firm → sole supplier, price maker
  - Produces good/services with no close substitute
  - Protected by barriers to entry: natural, ownership, legal
  - Ex: BC Hydro, ICBC

- Barriers to Entry
  - **Natural:** economies of scale enable one firm to supply the entire market at the lowest possible cost
  - **Ownership:** if one firm owns a significant portion of a key resource
  - **Legal:** patent, legal restrictions

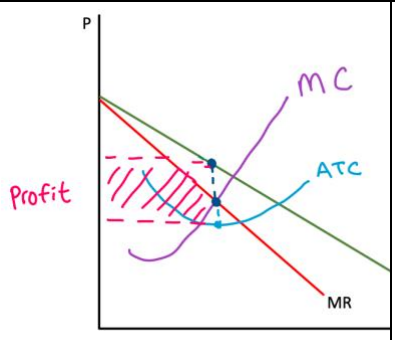
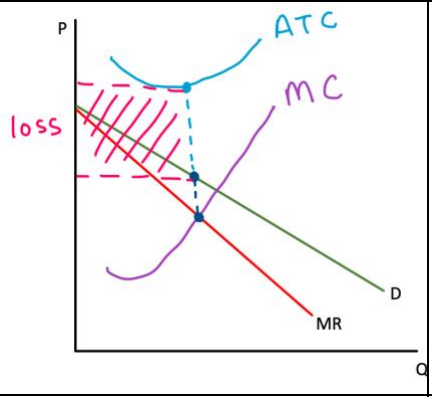
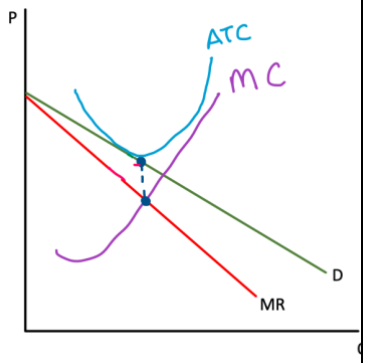
- Price and Marginal Revenue
  - Monopoly is a **price setter**: they set the market price and quantity
    - Market demand= Firm's demand
    - In monopoly, demand is always elastic.

- **Economic Profit and Revenue**
  - Profit maximizing **qty.** where **MR=MC**
  - Profit maximizing **price** where **demand= profit max qty.**
    - **MR<P:** to sell a larger output, a monopoly must set a lower price
  - **Profit**: If ATC<P
  - **Loss**: ATC>P
  - Can't just leave the market!
  - **DWL:** Market inefficiency created

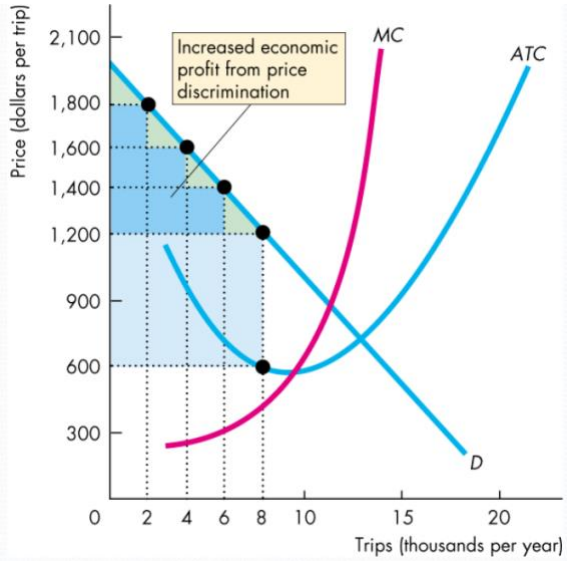


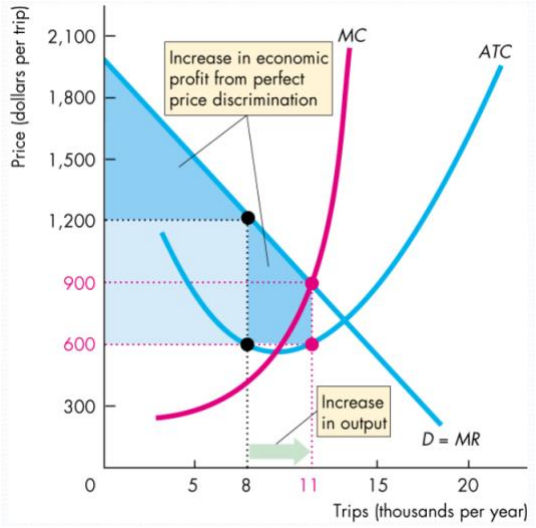


- **Output decisions**

Short Run Profit	Short Run Loss	Breakeven Point
		
• Makes profit P>ATC • *Profit when D>ATC	• ATC>D	• D=ATC

- Other Types of Monopoly
  - **Single Price Monopoly**: charges same price for the product
  - **Price discrimination**: charging different prices for the same product
  - **Perfect price discrimination**: a firm sells each unit of output for the highest price customer is willing to pay.
    - No DWL incurred





11. Practice Questions

(1) Q: Which of the following is not a microeconomic concern?

a) The wage rates of electricians in Toronto
b) The effects of agricultural price supports on the income of farmers
c) how profits are maximized by a firm
d) The causes of unemployment in Canada

(2) Q: The opportunity cost of changing your decision on what to major in college is highest

a) after you have completed your major and received your diploma
b) before you enter college
c) before you have earned any of the credits needed to obtain the major you initially chose
d) after you have officially declared your major
e) after you have earned half of the credits to obtain the major you initially chose

(3) Q: If Mark is producing at a point outside his production possibilities frontier, the he:

a) must be doing the best he can with limited resources.
b) has a high opportunity cost of moving from this point
c) This scenario is not possible
d) can increase production of both goods with zero opportunity cost
e) is a=unaffected by costs and technology

(4)Q: If cows are consumed for meat, their leather can be used in the production of boots. Given this relationship, if the demand for beef increases:

a) the price of leather boots falls
b) the supply of leather boots falls
c) the demand for leather boots rises
d) the price of beef falls
e) the supply of beef rises

(5) Q: Oatmeal is a normal good and cold cereal is a substitute for oatmeal. Raisins are a complement of oatmeal. Which of the following increases the demand for oatmeal?

a) an increase in the price of raisins
b) an increase in the price of cold cereal
c) a decrease in income
d) an increase in the supply of oatmeal
e) a decrease in population

(6) Q: Since 1980, there has been a dramatic increase in the number of working mothers. Based on this information alone, we can predict that the market for child care services has experienced

a) a decrease in quantity supplied
b) an increase in demand
c) an increase in supply
d) a decrease in demand

(7) Q: The cross-price elasticity of demand between Coca-Cola and Pepsi-Cola is _____. From this information, we know that Coke and Pepsi are _____:

a) positive, normal goods
b) negative, substitutes
c) positive, complements
d) positive, substitutes

(8) Q : The slogan "If I'm a Pepper, you're a Pepper, we're a Pepper, too" suggest very strong brand loyalty. Demand for Dr. Pepper is likely to be:

a) relatively price elastic
b) relatively income elastic
c) relatively price inelastic
d) unit elastic
e) infinitely elastic

(9) Q: If the government imposes a maximum rent for housing that is above the equilibrium price, then you predict that

a) the supply curve of housing shifts leftward
b) the law will have no effect in the market for housing
c) the demand curve for housing shifts rightward
d) the law will create a surplus of housing
e) the law will generate a shortage of housing

(10) Q: An effective minimum wage _____ the firm's surplus and _____ the worker's surplus:

a) increase, increase
b) increase, decrease
c) decrease, increase
d) decrease, decrease
e) has no effect on, has no effect on

(11) Q: Michelle can consume either pizzas or hamburgers. The price of a hamburger is $1 and the price of a pizza is $5. Let MUh be the marginal utility of hamburgers and MUp be the marginal utility of pizzas. In consumer equilibrium, what must the MUh/MUp equal?

a) 1/6
b) 5/1
c) 1/1
d) 1/5
e) 4

(12) Q: According to the marginal utility theorem, when Thomas decreases the number of hocket games that he attends each week from 3 to 2, his:

a) marginal utility increases
b) marginal utility is maximized
c) total utility is maximized
d) total utility increases

(13) Q: A rise in the price of gasoline, everything else remaining the same, _____ the relative price of a restaurant meals and _____ real income in terms of restaurant meals.

a) does not change, increases
b) increases, does not change
c) decreases, decreases
d) decrease, does not change

(14) Q: Alyson consumes chocolate and candles. When Alyson is at her best affordable point, she is:

a) on the indifference curve that is closest to the origin and minimizing the marginal rate of substitution
b) on her budget line, on her highest attainable indifference curve, and maximizing marginal rate of substitution
c) on her budget line, on her highest attainable indifference curve, and has a marginal rate of substitution between chocolate and candles that is equal to the relative price of chocolate and candles
d) on the indifference curve that is farthest from the origin and maximizing the marginal rate of substitution

(15) Q: Average variable cost is at a minimum at the same output at which

a) average product is at a maximum
b) marginal cost is at a minimum
c) average product is at a minimum
d) marginal product is at a maximum

(16) Q: The steeper the slope of the total product curve:

a) the smaller the average product
b) the greater the total cost
c) the smaller the marginal product
d) the greater the marginal product

(17) Q: Which of the following statements about a firm's production function are true?

I. When total product is at its maximum, marginal product is zero.
II. When total product rises, marginal product is rising
III. When marginal product is greater than average product, average product is rising
IV. When marginal product is less than average product, average product is falling

a) I and II
b) II and III
c) II and IV
d) I, III, and IV
e) all of the above

(18) Q: Which of the following is not correct for the perfectly competitive firm, in the long run?

a) price= min. AC
b) price= MR
c) price= min. AVC
d) price= MC
e) normal profit

(19) Q: Under perfect competition, firms maximize their profits by producing a level of output at which:

a) MC= AFC
b) MC=MR
c) MC<MR
d) MR<D
e) MR= AFC

(20) Q: Under monopoly, firms maximize their profits by producing a level of output at which:

a) MC= AFC
b) MC=MR
c) MC<MR
d) MR<D
e) MR= AFC

Written Questions

(21) The table below gives the supply and demand schedules for teenage labour.

Wage rate ($ per hour)	Q. Demanded (thousands of hrs)	Q. Supplied (thousands of hrs)
9	50	10
10	45	15
11	40	20
12	35	25
13	30	30
14	25	35
15	20	40
16	15	45
17	10	50

Consider a minimum wage law set by the government.

a) If the minimum wage set at $11 an hour, how many hours do they work and how many hours of labour are unemployed?

- If minimum wage is $11/hr, workers work 30,000 hours, thus 0 hours of labour unemployed.

b) If the minimum wage set at $15 an hour.

I. How many hours do they work and how many hours of labour are unemployed?

II. If the demand for teenage labour increases by 10 thousand hours a month, how many hours of labour are unemployed?

- If minimum wage is $15/hr:

I. workers work 20,000 hours; 20,000 hours of labour unemployed

II. If demand of labour increases by 10,000 hours/month, 10,000 hours of labour unemployed

(22) Q: Daniel has $80 a week to spend, and he can spend as much time as he likes playing on his friend's PS5 and Switch. His friend rents PS5 for $10/hr and rent Switch $5/hr. Assume that both of the games can be rented only in hourly basis. The table shows Daniel's marginal utilities from each game.

Hours per week	MU from PS5	MU from Switch
1	70	40
2	50	25
3	40	15
4	30	10
5	25	8
6	20	5
7	15	4
8	10	3

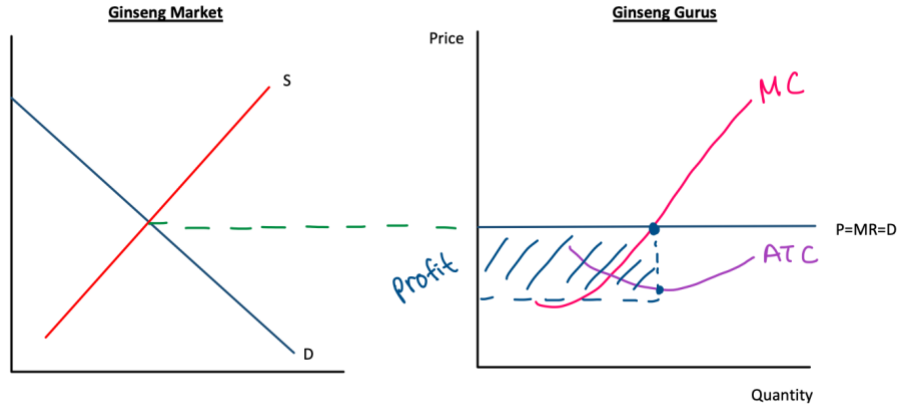
- Developing marginal utilities per dollar for each of the sports on the table, show how many hours of PS5 and how many hours of Switch he plays to reach his consumer equilibrium:
  - According to comparing MU/$, Daniel should play 6 hours of PS5 and 4 hours of Switch. By this, he is spending all his budget (10*6+4*5= 80) and MU/$ for PS5 and Switch is the same.
  - (MUp/$)= 20/10= 2 = (Mus/$)= 10/5= 2

(23) Q: Explain why the indifference curves are:

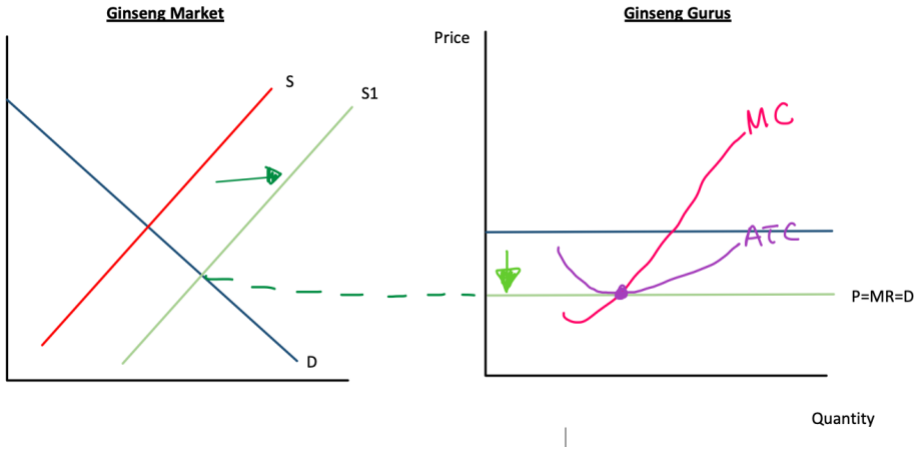
- Convex
  - Indifference curve is convex to show the diminishing marginal utility rule.
- Do not cross
  - Indifference curves never intersect because all points on the same curve represent equivalent satisfaction.

24) Q: Ginseng Gurus, a company operating in a perfectly competitive industry is experiencing short term profits.

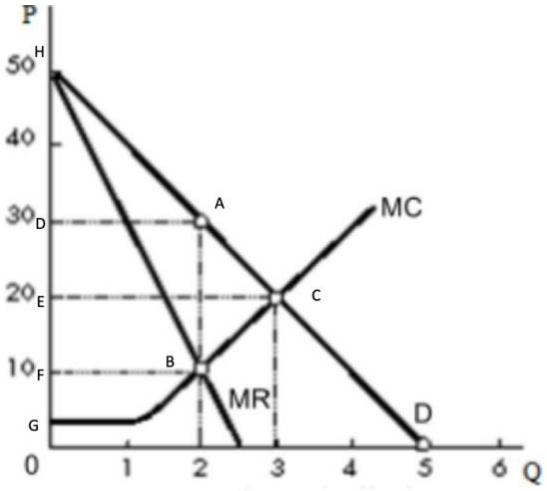
- A) show the short-term profit graphically.



- B) Show and explain what happens to the ginseng market as a result of the short-term profit.



(25) The graph below shows the market demand, marginal revenue, and marginal cost curves of a single-price monopoly.



- What are the profit-maximizing output and price of the monopoly?
  - Qty: 2
  - Price: $30
- If it were a perfectly competitive market, what would be the profit-maximizing output and price?
  - Qty: 2
  - Price: $10
- Which area shows producer surplus, consumer surplus, and DWL of the monopoly?
  - Producer surplus: EBG
  - Consumer Surplus: HAD
  - DWL: ABC