Sample: Microeconomics - Marginal Cost and Average Total Cost

Q#1

A) At first time the grower starts to experience the diminishing marginal productivity (MP) of labor by producing. 5 units, as the marginal costs (MC) is the mirror image of MP. From the graph we notice that starting from 5 units of output MC is starting to grow.

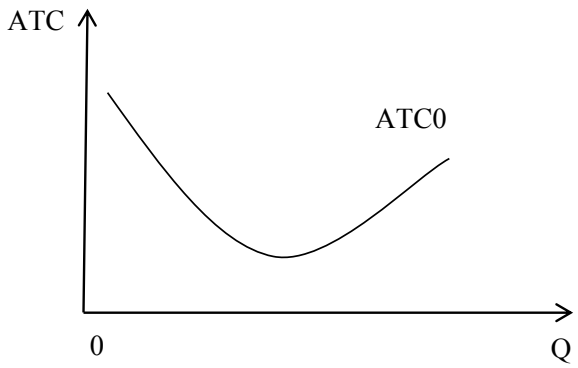
B) From the task we know that the company operates in the perfectly competitive market in which the equilibrium equation is P=MC. From the graph we can see that when price equals 5 the equilibrium quantity equals 9 units.

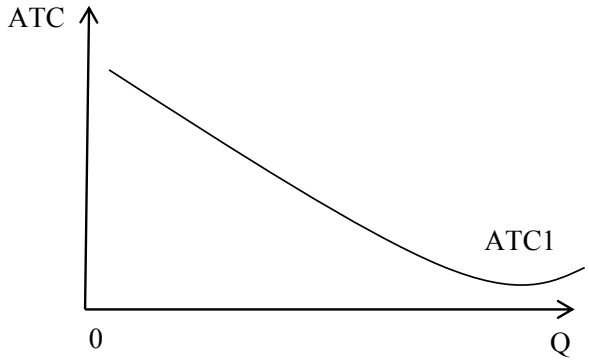
C) When price is below 3 the grower shouldn't bother to cultivate his crop because in such case the price falls below the minimum AVC and the grower will minimize his losses in the short run by shutting down production.

D) $5 per pound wouldn't be an equilibrium market price in the long run. At this price level MR is greater than MC, which will attract the new companies in the industry. The equilibrium price in the long-run equals $4, as at this price MR=MC, thus economic profit equals zero and there is no tendency for firms to enter or leave industry.

E) In such case the MC curve will move to the left which means that MC will grow for each of the production level. In such case $5 price can become an equilibrium price in the long run in case if at the such price the condition of MR=MC=P=min ATC will be satisfied. The exact equilibrium price and quantity in the long rung depend on the degree at which the MC will grow due to the shortage of the farm labor experience.

F) On the figure below ATC0 reflects the ATC before scheduling and ATC1 reflects the ATC after scheduling. As we can see from the figure below the minimum efficient scale became more extensive due to the investments in more large scale capital equipment and diseconomies of scale occur only at very large outputs. ATC therefore declines over a broad range of output. Now that to reach the minimal effective scale the company should produce substantially more units of product.





Answer: a) MC=5 b) Q= 5 units c) P below $3 d) No, equilibrium P =$4

Q#2

a) Lets' calculate the Bob & Jane's accounting profit. Generally it is calculated as total revenue (TR) minus total costs (TC). According to the task TC equals $4.5 million.
Accounting profit = TR – TC = $5.0 million -$4.5 million =$0.5 million
While calculating economic profit we should take into consideration opportunity costs. In our case the opportunity costs include the Bob & Jane's wage at the corporate jobs and the 10% return on their own funds which they could receive if they invest their funds in a diversified portfolio.
Economic profit =Accounting profit – forgone corporate wage – forgone %portfolio return = $0.5 million - $0.25 million-0.1*$0.5 million=$0.2 million

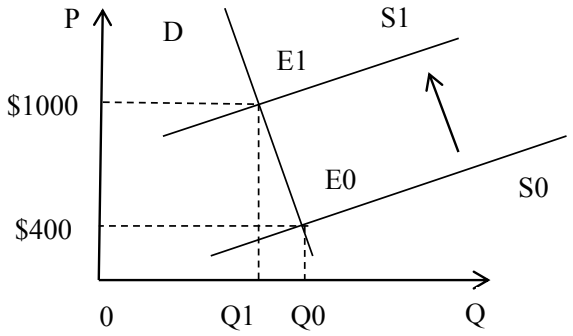
b) Fixed costs are expenses that have to be paid by a company, independently of any business activity and so they don't depend on the production level. In our case to the fixed costs relates: lease payments on office space and computer Equipment & Software ($0.1 million), overhead expenses, including insurance and utilities ($0.1 million), advertising on Internet & Magazines (purchased at the start of the year) ($0.5 million) and additional sales expenses (phones, business travel, entertaining clients) ($0.2 million).
Fixed costs = $ 0.1 million + $ 0.1 million + $ 0.5 million + $ 0.2 million = $ 0.9 million.

Answer: a) Accounting profit = $0.5 million, Economic profit = $0.2 million: b) Fixed costs = $0.9 million

Q#3

a) The supply/demand diagram of the market for palladium is illustrated on the figure below. From the figure we can see inelastic demand curve. The initial equilibrium point is E0. The concerns thet political infighting in Moscow might choke future palladium supplies sharply shorten the palladium supply which reflected in in the supply curve shift

from S0 to S1. The new equilibrium point moves to E2 with the price of $1000 per ounce. The price increse leads to insignifficant decrease in quantity demanded due to the inellastic demand curve.



b) The demand on the palladium according to the article seems to be inelastic as the increase in price leads to less than proportional decrease in the quantity demanded. According to the article "the main source of the stuff is Russia" which means that the other world produces only a small fraction of the palladium. This suggests that Russian suppliers of palladium face little competition and actually almost monopolize the market. The palladium has also practically no substitutes except platinum which price is cheaper. However using platinum needs "changing car design" which makes platinum unacceptable as a substitute in the short run. However in the long run the elasticity of the demand will increase as firms will have enough time to alter their car designs and use the cheaper platinum.

Answer: b) the demand is inelastic.

Q#4

a) The typical skier's WTP schedule slope is downward due to the law of demand according to which "if other things equal, as price falls, the quantity demanded rises, and as price rises, the quantity demanded falls". This happens mostly because skier's consumption is subject to diminishing marginal utility.

b) The elasticity of demand reflects the sensitivity of consumers to a price change. It is measured as a percentage change of quantity demanded to a percentage price change. The

elasticity of demand in the definite point is usually calculated using the following formula:

$$E_{dp} = \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q}.$$

Where ΔP - change in quantity demanded of a product, ΔQ - change in product price, Q – original quantity demanded, P – original product price.

If the resort operator charged $5 per ride than the quantity demanded by each skier equals 7 rides. The demand curve equation in our case is P=12-Q. The coefficient before Q equals $\frac{\Delta Q}{\Delta P}$. So in our case the elasticity of demand will be calculated as follows:

$$E_{dp} = -1 \cdot \frac{5}{7} \approx -0.714$$

c) $5 per ride isn't a revenue maximizing price. Total revenue (TR) reaches its maximal level in the point where the elasticity of demand is unit elastic. When demand is elastic the price reduction will lead to the growth in total revenue until the demand becomes unit elastic and vice versa if the demand is inelastic the growth in price will lead to the growth in TR level. TR will reach its maximum level when P equals $6 per ride. In such case $E_{dp} = -1 \cdot \frac{6}{6} = -1$.

d) Consumer surplus is the difference between what consumers are willing to pay for a good or service relative to its market price. On the graph consumer surplus is the area above the current price ($5 per ride) and below the WTP line. In our case the consumer surplus equals:

$$CS = \frac{1}{2} \cdot (P_{max} - P) \cdot Q = \frac{1}{2} \cdot (12 - 5) \cdot 7 = \$24{,}5$$

e) The ski-resort owner should set the price which will grab all the skiers' consumer surplus. To define such price we should calculate the amount of the consumer surplus for the price $0. The calculation is represented below:

$$P_{all-day\ lift\ pass} = \frac{1}{2} \cdot (P_{max} - P) = \frac{1}{2} \cdot (12 - 0) \cdot 12 = \$72$$

Answer: b) -0,714 c) No d) $24,5 e) $72.