1. Assume the following table depicts the market supply and demand for milk in the United States.

Price per gallon	Quantity Supplied (thousands)	Quantity Demanded (thousands)
$1.50	600	800
$1.75	620	720
$2.00	640	640
$2.25	660	600
$2.50	680	560

a. What are the equilibrium market price and quantity?
b. What happens to price and quantity if the government imposes a price floor of $2.25 per gallon?
c. What is the (arc) price elasticity of demand between $2.00 and $2.25 per gallon?
d. What would happen to the total industry revenues if the producers were able to collude and restrict output to raise prices?

a. The equilibrium price is the price that clears supply and demand. The table shows that the equilibrium price is equal to $2, the equilibrium quantity is equal to 640 thousand gallons.

b. Let us notice that the equilibrium price is lower than a floor price established by the government (2,25 $), at which quantity of demand is equal to 600 thousand gallons, and the supply is equal to 660 thousand gallons. Consequently, the government price policy will lead to extra supply of 60 thousand gallons.

c. Arc elasticity of demand when the price increases from $2 to 2,5 $ per gallon is equal to

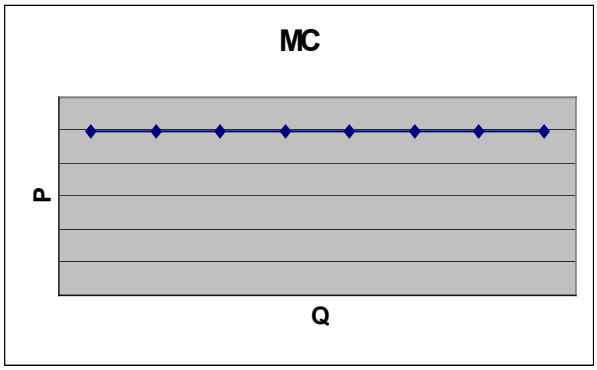
$$E = \frac{\Delta D/D}{\Delta P/P} = \text{(Change in demand, \%) / (Change in price, \%).}$$

Change in demand, % = -80/640 = -0,125
Change in price, % = 0,5/2 = 0,25.
Arc elasticity of demand =-0,125/0,25 =-0,5

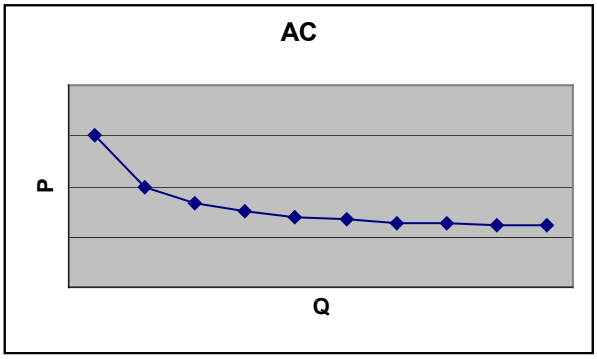
d. If the producers were able to collude and restrict output to raise prices (for example up to 600, then the price would rise up to $2,25), then the total income of the industry will increase to 600*$2,25=$1335, which is higher than the equilibrium level ($2*640=$1280).

2. Semiconductor chips are used to store information in electronic products, such as personal computers. One of the early leaders in the production of these chips was Texas Instruments (TI). During the early period in the development of this industry, TI made the decision to price its semiconductors substantially below its production costs. This decision increased sales, but resulted in near-term reductions in profits. Explain why TI might have made this decision. Include in your answer what you think average costs, fixed costs, and marginal costs might have looked like for TI. Also consider the advantages in the long run versus short run from such a strategy. (What are the cost advantages TI would have if it gains a larger share of the market.)

Total costs of TI:
TC=FC+VC=F+C(Q)=F+a*Q, thus F is very large.
Profits (Q)=P(Q)*Q-TC= P(Q)*Q-F-a*Q
MC=a



AC=a+F/Q



TI has accepted this decision in order to increase its market share.
Let Q (0) be initial sales of TI. Initially it was not big enough. It was a start-up strategy of low prices. Under these circumstances a Profit (q0) < 0, because AC (q0) was big.
Let Q (1) be an increased as a result of the strategy of low initial prices sales.
Q(1) > Q(0). AC (q0), AC (q1) < AC (q0) (it is shown on the diagrams).
The Profit (q) becomes positive in the long-term as a result of scale effect and because of decrease in average costs and a flat shape of the marginal costs curve. What gave an advantage to such a strategy in the long-term in comparison to the short-term period?
The advantage of the TI costs curve came from a high level of constant costs and costs of licenses, which played a role of entry barriers protecting TI from rivals.
Thus the low level of average costs, which was established as a result of TI's market-share-increase strategy, allows establishing lower prices than competitors.