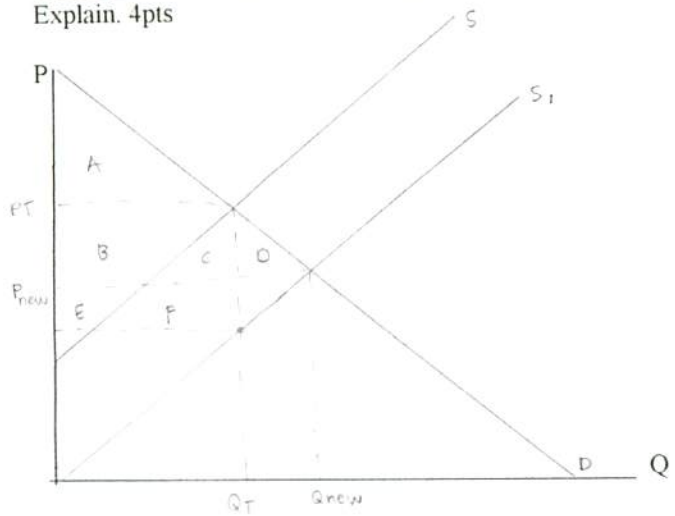
B. 10 Points. 14/10 good answers!

Computer chips are manufactured by Japanese firms and sold in the United States. Japanese imports are currently subject to a $60 per unit tariff. A government official argues that the tariff is keeping prices too high and recommends a policy that would eliminate the $60 tariff on imports.

Suppose that the supply of computer chips is characterized by an upward sloping supply curve and U.S. demand is characterized by a normal downward sloping demand curve.

i. Using the space below, illustrate the impact of the policy recommendation. Label the original (w/tariff) price and quantity, Pt and Qt. Label the new (no tariff) price and quantity Pnew and Qnew. In words, what effect does the removal of the tariff have on U.S. welfare? Under what condition would expect welfare to increase as a result of the policy? Explain. 4pts



Explanation:

	with tariff	No tariff
CS	A	ABCD
PS	— only concerned w/ U.S.	—
tariff rev	BCEF	—
social gain	ABCEF	ABCD

difference: EF - D

The removal of the tariff increases consumer surplus from A to ABCD but eliminates the tariff revenue. If EF < D then we would expect US welfare to increase as a result of removing the tariff [if tariff rev. is less than gains to consumer surplus, welfare would increase]

Now suppose these curves are given by the following equations:
U.S. Demand equation: P= -2Q + 240
Supply equation: P=4Q + 60

ii. Calculate Pt, Qt, Pnew and Qnew: Pt= $180 ; Qt= 30 ; Pnew= $160 ; Qnew= 40 2pts.

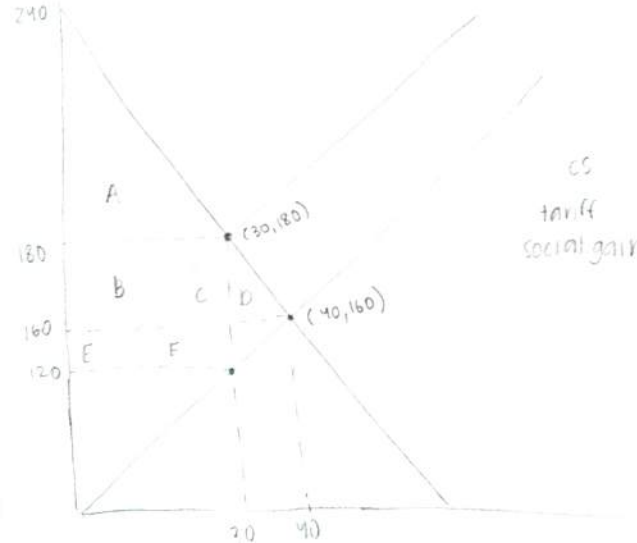
iii. Calculate consumer surplus before and after the removal of the tariff. 2pts.

CS w/tariff: 900 A = (240-180)(30)(1/2) = 900

CS w/o tariff: 1600 ABCD = (240-160)(40)(1/2) = 1600

iv. According to the efficiency criterion (and assuming we care only about the welfare of Americans) should we reject or accept the policy recommendation? Why? 2pts.

Tariff rev. = (180-120)(30) = 1200



	with	without
CS	A 900	ABCD 1600
tariff	BCEF 1800	
social gain	ABCEF 2700	ABCD 1600

In this case, according to the efficiency criterion we should reject the policy recommendation. Although consumer surplus would increase by 700, we would lose tariff revenue of 1800 if the tariff was eliminated. Currently social gain with tariff ($2700) is greater than social gain would be if the tariff was eliminated ($1600).

In the long-run, produce where MC = P = ATC

$16q = 8q + \frac{200}{q}$ $8q = \frac{200}{q}$ $8q^2 = 200$ $q^2 = 25$ $q = 5$

$P = 5(16) = \$80$

C. 10 Points. (2 points each) 10/10

Widgets are provided by a competitive constant cost industry. **Each firm has $200 in fixed costs**. Each firm has the following variable cost and marginal cost curves.

$VC = 8q^2$ $AVC = \frac{8q^2}{q} = 8q$ $TC = VC + FC$ $TC = 8q^2 + 200$ $ATC = \frac{8q^2 + 200}{q} = 8q + \frac{200}{q}$

$MC = 16q$

Suppose the current market price is $32. Industry demand is given by the following equation: p= 320 – 2Q.

i. How many units will each firm produce at this price? 2 $MC = P$ $16q = 32$ $q = 2$

ii. Will firms shutdown in the short run? How do you know?

If P>AVC then the firms will not shutdown.

$AVC = 2(8) = 16$ $32 > 16$ so the firms will not shutdown.

iii. How many firms are currently in the industry? 72 $32 = 320 - 2Q$ $2Q = 288$ $Q = 144$ # firms = $Q/q = \frac{144}{2} = 72$

Suppose the industry adjusts to its long-run equilibrium.

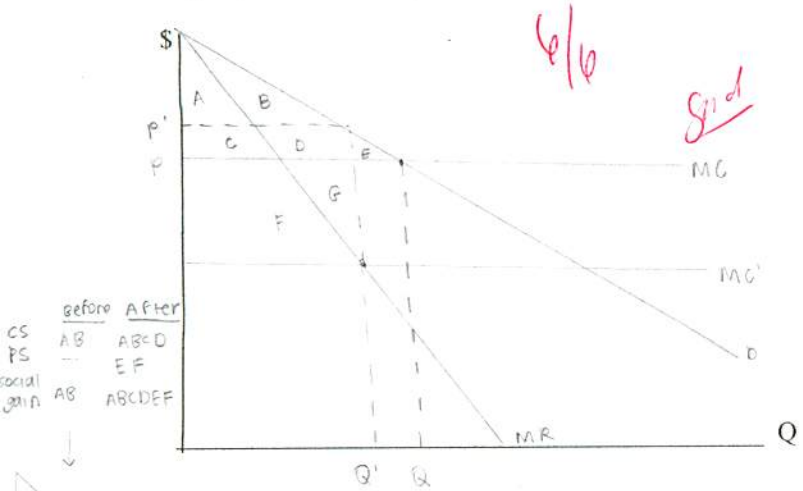
iv. What is the break-even price? $80

v. How many firms leave the industry? 48 $80 = 320 - 2Q$ $2Q = 240$ $Q = 120$ # firms in LR = $\frac{120}{5} = 24$ firms

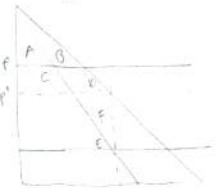
72 - 24 = 48 firms leave

D. 6 points. Consider a firm with constant (horizontal) marginal cost that behaves competitively. A horizontal merger lowers the firm's marginal cost and causes the firm to behave like a monopoly. How does the merger affect producer's surplus, consumers' surplus and social gain? Illustrate graphically and explain.

6/6 Good



CS is reduced in the case above while PS is increased after the merger. If MC' was lowered much more, both CS and PS would increase and social gain would rise from AB to ABCDEF (as seen to the left).



Explanation:

	Before Merger	After Merger
CS	ABCDE	AB
PS	—	CDFG
Social Gain	ABCDE	ABCDFG

There is a gain of FG which represents the cost savings due to greater efficiency (MC is lowered) but ✓ there is also a loss of E which represents loss due to reduction in output.

Whether E < FG will vary depending on the ✓ case. If MC is lowered much from the original MC the monopoly price will actually be lower than the competitive price & both producers and consumers will gain from the merger.

4/4

E. Suppose a monopolist sells in two distinct markets. The demand and marginal revenue for the first market are given by $P_1 = 240 - 2Q_1$ and $MR_1 = 240 - 4Q_1$, respectively, where Q_1 is the quantity demanded and P_1 is the price paid by the first group. The demand and marginal revenue for the second market are given by $P_2 = 120 - Q_2$ and $MR_2 = 120 - 2Q_2$, respectively, where Q_2 is the quantity demanded and P_2 is the price paid by the second group. The monopoly's marginal cost is given by $MC = 4/9\ (Q_1 + Q_2)$. 4 pts.

i. How much does the monopolist supply in each market (Q1, Q2)?

$Q_1 = 50$ units $\quad Q_2 = 40$ units

ii. What prices does the monopoly charge in each market (P1, P2)?

$P_1 = \$140$ per unit $\quad P_2 = \$80$ per unit

$MR_1 = MR_2 = MC$ Any producer selling in 2 different markets will choose quantities so that his marginal revenue is the same in both markets.
Further, a simple monopoly will maximize its profit by producing where MR = MC.
So we use the formula $MR_1 = MR_2 = MC$. Good

$240 - 4Q_1 = \frac{4}{9}(Q_1 + Q_2)$

$240 - 4Q_1 = \frac{4}{9}Q_1 + \frac{4}{9}Q_2$

$240 - \frac{40}{9}Q_1 = \frac{4}{9}Q_2$

$Q_2 = 540 - 10Q_1$

$120 - 2(540 - 10Q_1) = 240 - 4Q_1$

$120 - 1080 + 20Q_1 = 240 - 4Q_1$

$-960 - 240 = -4Q_1 - 20Q_1$

$-1200 = -24Q_1$

$\boxed{Q_1 = 50}$

$Q_2 = 540 - 10(50)$

$Q_2 = 540 - 500$

$\boxed{Q_2 = 40}$

$P_1 = 240 - 2Q_1$

$P_1 = 240 - 2(50)$

$P_1 = 240 - 100$

$\boxed{P_1 = 140}$

$P_2 = 120 - Q_2$

$P_2 = 120 - 40$

$\boxed{P_2 = 80}$