1. Parts a - f are worth 1 point each, while parts g and h are worth 2 points each for a total of 10 points.

1a. Remember that all points on the production possibilities frontier are efficient in the sense that all resources are fully utilized. Therefore, if the economy chooses to produce no corn, then the only efficient point of production is were the ppf crosses the y-axis (70 clover).

1b. If Lorain county increases its corn production from 0 to 50 million ears, then it decreases clover production from 70 million to 60 million. The trade-off or opportunity cost of corn would thus be 10 million cloves of clover.

1c. If Lorain county increases its corn production from 50 to 100 million ears, then it increases clover production from 60 million to 0 million. The trade-off or opportunity cost of corn would thus be 60 million cloves of clover.

1d. Since the opportunity cost falls as more corn is produced, the resources of Lorain county are non-identical. Think about the example we discussed on class. As Lorain county produces more and more corn, they begin to use those resources that are better suited for clover production.

1e. The convex shape of the indifference curve implies that corn and clover are ordinary goods. As a result, Lorain county is willing to give up more corn for an extra unit of clover as more corn is consumed.

1f. The point would be the point of tangency between the ppf and the indifference curve I₁.

1g. Lorain county is happiest at point f because there is no way that the county can reallocate its resources without making itself worse off. Suppose Lorain county chooses to produce more corn and less clover. It would find itself with a less preferred bundle (lower indifference curve). Similarly, if Lorain county chooses to produce more clover and less corn, it would also find itself with a less preferred bundle (lower indifference curve).

1h. The reason why Lorain county would ever want to grow clover is because clover increases the yield of both corn and clover. Therefore, the growing of clover represents an investment into the future productive capability of Lorain county. However, by growing clover, Lorain county gives up current consumption in the form of corn. As we discussed in class, the balance struck between current and future consumption depends upon the preferences of the society.
2. Part a is worth 1 point, while parts b - d are worth 2 points each for a total of 7 points.

2a. There are two fundamental reasons for the fall in demand of gasoline when the price increases. The first (substitution effect) is that people reduce or substitute out of gasoline and into less-costly goods. Examples would be public transportation or carpooling. The second (income effect) is that faced with a higher price and an unchanged income, some people are unwilling to pay the increased price.

2c. The equilibrium price is $1.00 per gallon. This is the only equilibrium price because this is the point where the quantity supplied equals the quantity demanded. Other prices will create either a shortage or a surplus and thus force the price towards $1.00/gallon.

2d. Even though 45 million gallons of gas are demanded, only 30 million gallons of gas will be supplied by the firms. Hence, all 30 million gallons of gas that are being sold will be bought. Yes, there would be long lines. People want more gas than is being supplied. This is because of $0.75, more gasoline is willing to be bought by consumers than it is willing to be supplied by suppliers.

3. Part a, b and d are worth 2 points each, while part c is worth 1 point each for a total of 7 points.

3a. After the EPA ruling, gas stations had to pay more to purchase a gallon of gasoline from the refineries. As a result, gas stations supplied less gas at each price (a leftward shift in the market supply curve). Demand, however, stays the same. At the initial price, there is now a shortage of gasoline (quantity demanded exceeds quantity supplied) which drives the price of gasoline up. The increase in price causes demand to decrease (movement along the demand curve, not a shift in the demand curve) until a new equilibrium is reached where quantity supplied equals quantity demanded.

3b. As chapter 4 shows, the upper portion of a linear demand curve is inelastic. If demand is inelastic, then the total revenue of the gas stations will increase since they are able to pass much of the increase in cost on to their customers. This can be seen by comparing the total revenue at a price of $1.00 to a price of $1.25. At a price of $1.00, there is 40 million gallons demanded for a total revenue of 40 million dollars. At a price of $1.25, there is 35 million gallons demanded for a total revenue of 43.75 million dollars.

3c. Even though demand is inelastic, the gas stations will be unable to pass all of the costs onto the consumers in higher prices. In other words, the equilibrium price rises less than the increase in per unit costs. As a result, the economic profits of the gas stations decrease.
3d. Even if ethanol-burning gas causes as much pollution as regular gas, total pollution is still reduced because the equilibrium demand is lower. As a result, less gasoline is consumed when ethanol-burning gas is in place versus regular gas. Total pollution is reduced when less gas is burned, even if ethanol gas causes the same pollution as regular gas. If this is the scenario, ethanol is simply a tool to get people to consume less gas.

4. Parts a - d are worth 1 point each, while parts e & f are worth 2 points for a total of 8 points.

4b. The U.S. has a comparative advantage in the production of computers since it can produce computers at a lower opportunity (foregoes 1 television for 1 computer) cost than Japan (foregoes 4 televisions for 1 computer).

4c. Japan has a comparative advantage in the production of televisions since it can produce televisions at a lower opportunity (foregoes 1/4 of a computer for 1 television) cost than the U.S. (foregoes 1 computer for 1 television).

4d. The U.S. has an absolute advantage in the production of both goods since it can produce more of both goods with the same amount of resources.

4e. If each country specialized in the production of the good in which it has the comparative advantage, the U.S. would produce 50 million computers and Japan would produce 40 million televisions. As a result, the consumption possibilities for the U.S. would be a straight line that connects 50 million computers and 0 televisions with 0 computers and 40 million televisions. The consumption possibilities for Japan would also be a straight line that connects 50 million computers and 0 televisions with 0 computers and 40 million televisions.

4f. If the U.S. Congress imposed a quota on the importation of Japanese televisions, then the price of both Japanese and U.S.-produced televisions would rise. This increase in the price of televisions would reduce the demand by U.S. consumers and also create a deadweight loss for society. The most likely response by the Japanese government would be to impose trade restrictions on U.S. computer manufacturers. This would lower exports of U.S. computers to Japan.