1. Question 4, p. 65.

2. You are going to go to San Francisco for work purposes. The distance is 80 miles. You can drive or take the train. The cost of the train is $10, and the journey takes 2.5 hours. Your wage is $10 per hour. The cost of the car journey is $4 for gasoline, plus depreciation of your vehicle. The depreciation cost is $0.10 per mile. The car journey takes 1.5 hours.

(a) What is the opportunity cost of getting to the city under each mode?
(b) Which policy would be more effective at getting people to take the train – a 20% gas tax, or speeding up the train by 30 minutes?

3. The table below shows the wages of high school graduates at different ages, the tuition cost of college, and the annual living expenses at each age which depends on gender and number of dependents.

(a) What is the opportunity cost of college for a 20-24 year old male with no dependents?
(b) Does the cost of college increase if the 20-24 year old has dependents? Explain.

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Number of dependents</th>
<th>Tuition cost</th>
<th>Living expenses</th>
<th>Wage of high school graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-24</td>
<td>Male</td>
<td>0</td>
<td>$4,500</td>
<td>$10,000</td>
<td>$12,000</td>
</tr>
<tr>
<td>20-24</td>
<td>Male</td>
<td>2</td>
<td>$4,500</td>
<td>$12,000</td>
<td>$12,000</td>
</tr>
<tr>
<td>20-24</td>
<td>Female</td>
<td>0</td>
<td>$4,500</td>
<td>$9,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>20-24</td>
<td>Female</td>
<td>2</td>
<td>$4,500</td>
<td>$10,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>40-44</td>
<td>Male</td>
<td>0</td>
<td>$4,500</td>
<td>$15,000</td>
<td>$20,000</td>
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</tr>
<tr>
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<td>Female</td>
<td>2</td>
<td>$4,500</td>
<td>$16,000</td>
<td>$16,000</td>
</tr>
</tbody>
</table>

(c) 40-44 year old males earn more than 20-24 year old males. Does that make college more expensive for them?
(d) Given the opportunity cost for males versus females, if the economic benefits of college were the same would you expect more women or more men to attend?
Marginal Costs and Efficiency

4. The new toll bridge to Hades over the river Styx cost $10 m. to build and costs $1 m to maintain per year (irrespective of usage). It can carry up to 1,000 cars per hour. Suppose that maximum traffic flow is 500 cars per hour. What is the marginal cost of another car using the bridge? Suppose the bridge had cost $20 m to build, would this change the marginal cost?

5. Governor Davis, dazzled by the state budget surplus constructs a 5 lane toll bridge to Hawaii at a cost of $1,000 billion which can carry 1,000 cars per hour. The interest cost on the expenditure is $50 billion a year. Once the bridge is built it is found that the demand curve for the bridge (per hour) is as shown in the figure.

(a) What is the efficient toll price for the bridge?
(b) At the efficient price what is the total annual consumer surplus generated by the bridge?
(c) If the toll is set at an efficient level was it efficient to have built the bridge? Explain using both sufficient conditions for efficiency given in class.
Simple Competitive Markets

6. The market demand for lemons is \( Q_d = 100 - 4P \). The market supply is \( Q_s = 4P - 20 \).
   a. Draw the demand curve and supply curve on the same diagram.
   b. What is the equilibrium price and quantity of lemons?
   c. What is the total consumer surplus at this price?
   d. What is the total producer surplus?
   e. What would be the cost to consumers in $ of a government ban on selling lemons? What would be the cost to producers? What would be the total social cost in $?
   f. Suppose that the government to support Florida farmers mandates a minimum lemon price of $20. What is the new consumer surplus and producer surplus. What happens to total surplus?
   g. Show on a diagram the area that corresponds to the loss of total surplus in (f).

Taxes in Competitive Markets

7. In search of a way to fund his promised income tax reduction, and in the interests of family values, Republican Presidential candidate George Shrub proposes a "revenue enhancement" measure: a "fee" of $0.90 per bottle for beer. His opponent, John McClean, senses that this proposal may have offended Shrub’s "bubba" electoral base. He argues that it is unfair to penalize beer consumers, many of whom are vets from "Nam" trying to quiet the demons aroused by endless hours of kitchen duty in the National Guard. He would instead impose the fee only on the fat cat corporate liquor producers.
   a. Suppose demand for beer is given by \( Q_d = 1,250 - 125P \), and supply is given by \( Q_s = 1,000P - 1,000 \), where \( P \) is in $. What is the pre-tax equilibrium price and quantity?
   b. If the fee of $0.90 is imposed on the consumers what is the new demand curve? What is the new equilibrium price and quantity? What is the amount of tax revenue?
   c. If the fee of $0.90 is imposed on the producers what is the new supply curve? What is the new equilibrium price and quantity? What is the amount of tax revenue?
   d. How much of the tax is paid by the consumer under each proposal?
   e. What is the loss of total surplus (in $) from each tax?
   f. Kurt Vile, fresh from an Econ 1 class, suggests that Shrub should instead tax insulin, since the demand curve for insulin is inelastic at \( Q_d = 900 \). What is his rationale? What is the net social saving from Kurt's proposal in $?
Price Ceilings and Price Floors

8. "Arugula" is a popular restaurant because the food is good and the owners, Benjamin and Sally, charge prices just high enough to cover the car payments on their Volvo. As a result there is always a long line for tables, especially on weekend nights, where the wait is typically an hour. Suppose demand for meals at Arugula is given by $Q_d = 100 - P$, where $P$ is the price in $. Suppose also the supply is fixed at $Q_s = 80$. Benjamin and Sally, however, charge only $10 for the meal.

a. Draw a diagram of the market for meals at Arugula. What is the market clearing price? What is excess demand at $P = 10$?

b. What, in $s$, is the social cost of Benjamin and Sally's good intentions? What creates this social cost?

c. Observing the long lines of people waiting, and wishing to spare them the discomfort of this, Benjamin and Sally build a special waiting area with seats where they serve free wine and whole grain snacks. Explain using a diagram what the effect is of their further good intentions on the social cost of their pricing policy.

d. Kurt Vile, a rabid free marketeer and military paraphernalia enthusiast, is incensed by Benjamin and Sally's refusal to charge the market price. He therefore takes to hanging outside Arugula on a Saturday night with a large whip flailing at the Birkenstock crowd to the snarling accompaniment of his pet Rottweiler "Maggie T." This considerably diminishes the waiting time at Arugula to 5 minutes. Benjamin and Sally reluctantly prosecute Kurt for his activities. Kurt argues in court that his activities had no social cost. Why?

e. Reluctantly Benjamin and Sally raise prices to the market clearing level to get rid of Kurt. Is anyone harmed by this decision? Explain.

f. Troubled by the profits they are now making Benjamin and Sally celebrate the Christmas season by announcing that 9 am on December 24, 1992 they will give $100 to each of the first 100 people who ask for the money at their house. Kurt is enraged and pickets the distribution with "Maggie T" and his Boy Scout Troop. Why? Would any distribution scheme satisfy Kurt?

9. In Berkeley there is a rent control ordinance. Suppose that the market demand for apartments is given by $Q_d = 2000 - P$, where $P$ is the monthly rent in $. Market supply is fixed at $Q_s = 1400$ apartments in the short-run. Rents are fixed at $400.

a. Will there be any deadweight losses from the rent controls? Explain.

b. Will there be any rent seeking losses? If so how much? Explain.
10. In both NYC and in India there are long lines for most government services - getting a driver’s license, getting a building permit, and so on.

   a. Why is waiting costly to society and what is the standard solution to the problem?

   b. Why is that solution not implemented?

   c. There is now a class of people who earn their living in both New York and India by waiting in line for those who can afford to pay them. Why does the existence of these professional "waiters" create stronger arguments for the market solution to the problem?

11. The University of California charges well below the market price for a college degree in California. For example in 1995-6 the University of the Pacific in Stockton charged $17,220 for tuition. In comparison UC Davis charged $4,174. Explain why this should create a rent seeking loss, and explain in what forms that loss will appear.