

Name: _____

1) Taxes.

- a. Show the impact of a specific tax of size τ placed on producers. Note the price paid by consumers, the price received by producers, the equilibrium quantity and the tax revenue, and contrast this to the pre-tax price quantity pair.
- b. Show the impact of an ad valorem tax rate α placed on consumers. Note the price paid by consumers, the price received by producers, the equilibrium quantity and the tax revenue, and contrast this to the pre-tax price quantity pair.
- c. Explain the concept of consumer incidence in reference to your answer to part b of this question

- 2) The own price demand elasticity was given in the lecture notes for some goods and services:

	Short Run	Long Run
Gasoline	-0.2	-0.5
HH Electricity	-0.1	-1.9
Air Travel	-0.1	-2.4
Intercity bus travel	-2.0	-2.2

- a. Write in the cell whether the own price demand elasticity for each item is: infinitely inelastic, unit inelastic, inelastic, perfectly inelastic, elastic, unit elastic, or infinitely elastic?

	Short Run	Long Run
Gasoline		
HH Electricity		
Air Travel		
Intercity bus travel		

- b. If I wanted to raise revenue by imposing a tax that raises the price of one of these by 10%, in the long run which good or service will have the largest % reduction in quantity demanded brought about by the imposition of the tax? Which one would have the smallest % reduction in quantity demanded?

3) Monopoly.

- a. Illustrate on a graph the difference between a monopoly outcome and a perfectly competitive market outcome. Identify areas corresponding to producer surplus, consumer surplus, and deadweight loss.

- b. What is a natural monopoly?

- c. What is the difference between a monopoly and a monopsony?

4) The demand curve is given to you as $q=450-50 \cdot p$.

- a. Fill out the following table (use the relatively higher price / relatively lower quantity pair for the denominator in the elasticity calculation)

Price	Quantity	Elasticity
1		-----
2		
3		
4		
5		
6		

- b. Draw this demand curve with price on the y-axis and quantity on the x – axis. Identify the range over which this curve is elastic or inelastic.

5) Circle the correct answer.

Statement	The statement is (circle the correct answer)	
Real values are expressed in inflation adjusted units.	True	False
Producer surplus is calculated as the area below the demand curve and above the price line.	True	False
With regard to income inequality, the higher the Gini coefficient the higher the degree of inequality.	True	False
Increasing the discount rate decreases the present value of future benefits.	True	False
The internal rate of return is the value of r at which present value benefits equal present value costs for a project.	True	False
Economic efficiency is achieved when a market arrives at a Pareto optimal outcome.	True	False
The cross price elasticity for a substitute is a negative number.	True	False
An open access good is excludable and non-rival.	True	False
The free rider problem leads to over-provision of a public good.	True	False
A necessary but not sufficient condition for economic efficiency is technological efficiency.	True	False

6) Budget Constraints. There are two goods, food (f) and other (o). The price of food is p_f , the price of other is p_o . Income is Y . Hence the budget constraint is $p_f \cdot f + p_o \cdot o = Y$.

- a. Draw the budget constraint and indifference curves for a consumer showing the optimal bundle with the original budget line and after the consumer has received food stamps of cash value FS .

- b. Draw the budget constraint and indifference curves for a consumer showing the optimal bundle with the original budget line and after the consumer has received a matching grant of size S for each unit of food purchased at price p_f .

7) Briefly describe first how each of the following can justify government policy response, and then identify a potential policy response that addresses the problem.

a. Information asymmetry in the real estate market.

b. The moral hazard problem in selling people vehicle insurance.

c. The positive externality conferred to citizens of a country by the provision of national security.

d. The negative externality imposed on society by secondhand smoke from consumption of the private good of a cigarette.

8) Benefit cost.

We are comparing two policies to reduce CO₂ emissions in our country. Both policies under consideration provide a flow of health benefits over the next four years ($t=0,1,2,3$) that are equal to 5 million in present value through reduced pollution. In addition, both policies lead to an increase in carbon sequestration that provides revenues from the sale of carbon credits on international markets of 2 million each year for $t=1$, $t=2$, and $t=3$.

The 'vehicle' policy option would be a four year ($t=0, t=1, t=2, t=3$) program that would cost 4 million in $t=0$, 3 million in $t=1$, 2 million in $t=2$, and 2 million in $t=3$. This would replace all vehicles in the country over ten years old and replace them with lower emission vehicles.

The 'industry' policy option would be a four year ($t=0, t=1, t=2, t=3$) program that would cost 7 million in $t=0$, 2 million in $t=1$, 1 million in $t=2$, and 1 million in $t=3$.

a) If the discount rate is 10%, which policy is a better option in net present value terms?

b) Note that the sum of the benefits, the sum of the costs for 'vehicle' and the sum of the costs for 'industry' each add up to 11 million over four years. Explain how the pattern of benefits and costs over time plus the role of discounting allowed you to select one option over the other in part (a).

9) Market structure and externalities. The inverse demand curve is given as $p=116-4q$. The supply curve is $p=20+4q$.

- a. What is the equilibrium price quantity pair if the market structure is perfectly competitive?

- b. If there is a marginal externality generated by production of the good equal to $4*q$ ($MC^E=4*q$), what is the socially optimal price quantity pair?

- c. If the market structure is a monopoly, what is the equilibrium price quantity pair chosen by the monopolist (who does not include MC^E in her decision)?

- d. Contrast your answers to parts b and c and explain this result.

10) Public goods. There are three people who live in a town. They each have a demand curve for the number of flowers to be planted in the town square (q is the # of flowers). Fran's demand is $\$5.50 - \$0.10 \cdot q$. Eloise's demand is $\$3.20 - \$0.40 \cdot q$. Madeline's is $\$3.25 - \$0.15 \cdot q$.

- a. If the marginal cost planting a flower is constant at \$4.80 per flower and no effort is made to avoid the free rider problem, what number of flowers will be planted and who will provide these flowers?
- b. How much less is this than the socially optimal number of flowers if the cost is \$4.80 per flower?
- c. Describe why public good provision is different from private good provision using the characteristics of rivalry and excludability.

Work Page: