

SECOND TEST. ECON 100C, SPRING 2014. NAME: _____

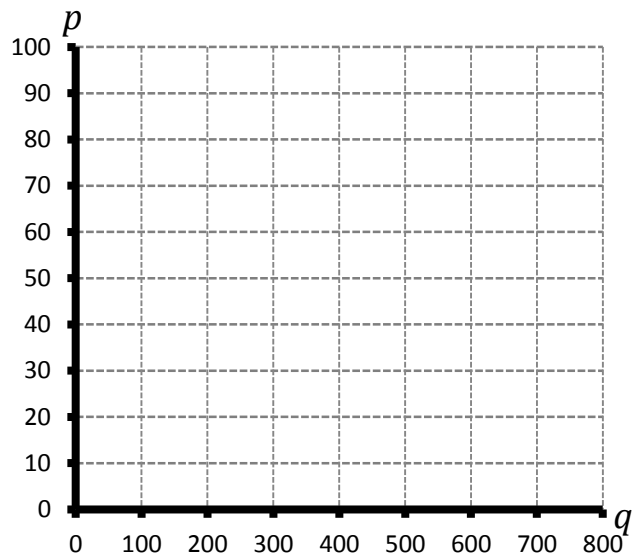
Fill in the blanks, and answer in the spaces provided. Show your work.

1. Monopoly. In the market for kombucha, cost and benefit are defined by the marginal benefit and marginal cost functions $MB = 80 - \frac{1}{10}q$ and $MC = 20 + \frac{1}{10}q$.

a) If the industry is perfectly competitive, then the equilibrium quantity will be _____, the equilibrium price will be _____, consumer surplus will be _____, producer surplus will be _____, and total economic surplus will be _____.

b) If supply is controlled by a monopolist with marginal revenue $MR = 80 - \frac{1}{5}q$, then the equilibrium quantity will be _____, the equilibrium price will be _____, consumer surplus (CS) will be _____, producer surplus (PS) will be _____, total economic surplus (TES) will be _____, and deadweight loss (DWL) will be _____.

c) On the graph to the right, draw and label the MB curve, the MC curve, and the MR curve. Show both the competitive (optimal) quantity and price, and the monopolist's quantity and price. For the case with the monopoly, use different shading to indicate CS , PS , and DWL .



d) Explain (in clear terms, as if to someone not in this class) why the monopolist's marginal revenue curve is below the marginal benefit (or demand) curve.

2. Public good. Five roommates are deciding how many Nintendo games to get for their house. Suppose that Nintendo games are entirely non-rival and non-excludable for them, and that each game costs \$20. Each roommate has the same individual total benefit schedule, given in dollar amounts in the column below marked TB_i .

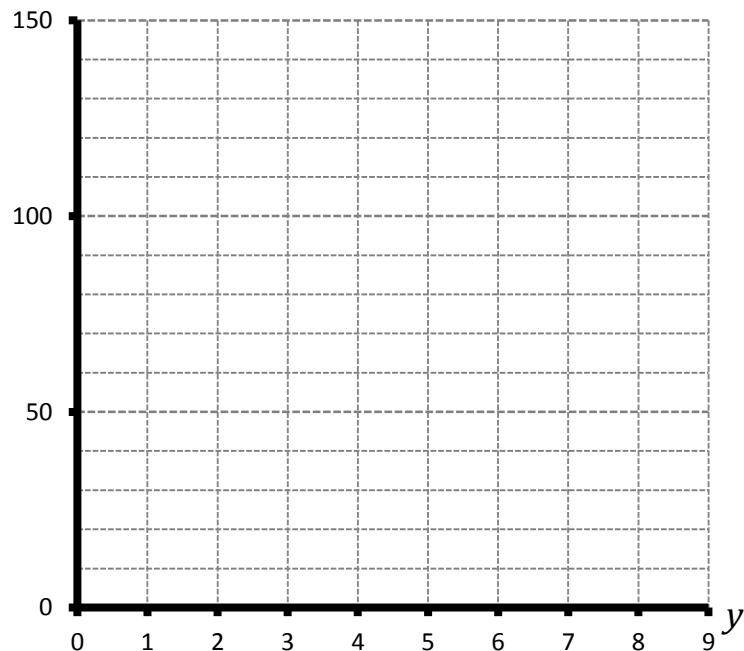
a) Fill in the missing information in the table below, i.e. the columns for MB_i (marginal individual benefit) MSB (marginal social benefit), TSB (total social benefit), TC (total cost), and TES (total economic surplus).

b) If there is no possibility of collective action, and each roommate must decide privately how many Nintendo games to buy, then the equilibrium quantity will be _____, and total economic surplus will be _____.

c) However, the socially optimal quantity of Nintendo games is _____, in which case total economic surplus will be _____.

Q	TB_i	MB_i	TSB	MSB	TC	TES
1	26					
2	48					
3	66					
4	80					
5	90					
6	98					
7	104					
8	106					
9	106					

d) On the graph to the right, draw the marginal individual benefit (MB_i) and marginal social benefit (MSB) 'curves'. Mark the equilibrium without coordination (y^*) and the optimum (y^o). Shade in the area that represents the *difference* in economic surplus between the uncoordinated equilibrium and the optimum.



3. Negative externality. Suppose the market for a certain good (e.g. 'gasoline') is perfectly competitive, but that the good causes a negative externality. Marginal private benefit, marginal private cost, and marginal external benefit are given by the functions below:

$$MB = 30 - \frac{1}{100}q \qquad MC = 6 + \frac{1}{50}q \qquad MEC = 6$$

a) No policy. Given that there is no policy to address the externality, find the equilibrium quantity, price, consumer surplus, producer surplus, external cost, and total economic surplus.

$$q^* = \underline{\hspace{2cm}} \qquad p^* = \underline{\hspace{2cm}} \qquad CS^* = \underline{\hspace{2cm}}$$

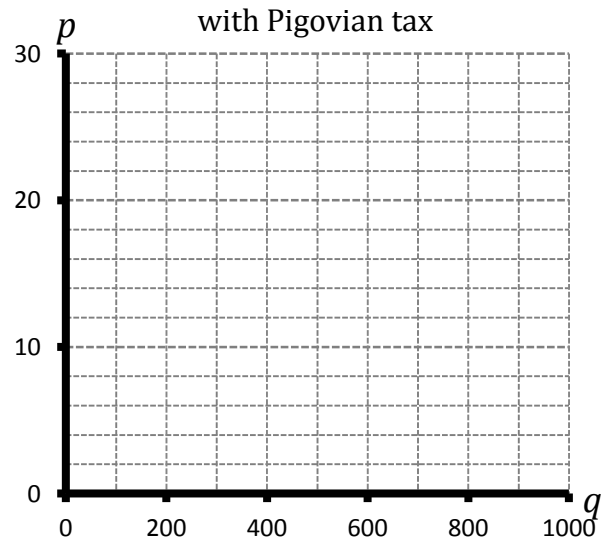
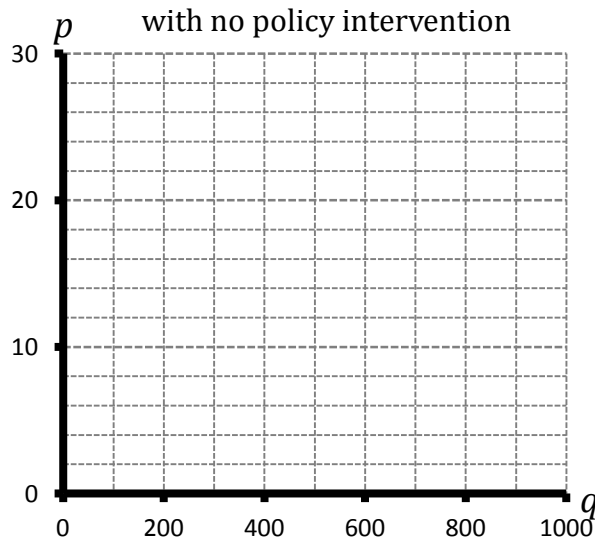
$$PS^* = \underline{\hspace{2cm}} \qquad EC^* = \underline{\hspace{2cm}} \qquad TES^* = \underline{\hspace{2cm}}$$

b) Pigovian tax. To maximize total economic surplus, the government should impose a tax of $\tau^o = \underline{\hspace{2cm}}$ per unit. Given this, find the equilibrium quantity, price, consumer surplus, producer surplus, external cost, government revenue, and total economic surplus.

$$q^o = \underline{\hspace{2cm}} \qquad p^o = \underline{\hspace{2cm}} \qquad CS^o = \underline{\hspace{2cm}}$$

$$PS^o = \underline{\hspace{2cm}} \qquad EC^o = \underline{\hspace{2cm}} \qquad GR^o = \underline{\hspace{2cm}} \qquad TES^o = \underline{\hspace{2cm}}$$

c) Graphing. On the left, graph the market with no policy intervention, labeling CS^* , PS^* , EC^* , and deadweight loss (DWL). On the right, graph the market with the subsidy, labeling CS^o and PS^o .



4. Reflection questions

a) Using the material from units 1 and 2, explain one type of circumstance in which taxes can reduce efficiency, and two types of circumstance in which taxes can increase efficiency, whether directly or indirectly. For each of these three situations, be as clear as possible about why efficiency increases or decreases. The use of diagrams is encouraged.

b) In the positive negative externality problem above, who is made better off by the Pigovian tax? By how much are they made better off, altogether?

c) Who is made worse off by the Pigovian tax? By how much?

d) What type of roads are most like pure public goods? Explain clearly.