

FIRST TEST. ECON 100C, FALL 2014. NAME: _____

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

1. Supply (discrete). In his spare time, Sven goes to a nearby lake and catches a few fish to sell at the local market. The table below gives his total cost of catching various possible numbers of fish. (Note that the second fish is harder to catch than the first one, and so on.) The market is competitive, and the going price for fish is \$6.

q	TC	MC
1	1	
2	4	
3	9	
4	16	
5	25	
6	36	
7	49	

TR	PS

- a) Fill in the MC column with Sven's marginal cost of each last fish.
- b) Fill in the TR (total revenue) and PS (producer surplus) columns with Sven's revenue from selling fish and his producer surplus.
- c) On the blank graph above, draw Sven's supply 'curve' (actually more of a staircase shape), and a line representing the price. Shade the area that represents Sven's producer surplus given his optimal quantity.

2. Supply and demand. Let's say that gin and vermouth are complements. If the price of vermouth goes up, how does this affect the price of gin, and the quantity of gin sold? Explain, using a diagram of the market for gin. (Hint: Don't overthink it; use the simplest possible story, which follows directly from the discussion in the book and in class.)

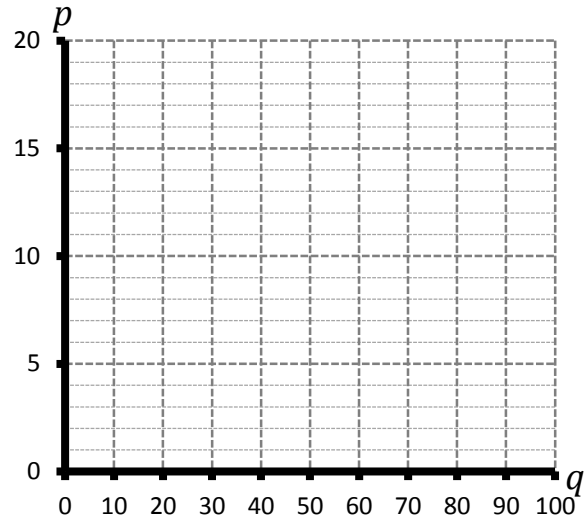
3. Demand (continuous). Lily enjoys eating cat food. Her total benefit and marginal benefit from cat food consumption are given by the functions $TB = 20q - \frac{1}{8}q^2$ and $MB = 20 - \frac{1}{4}q$, where q is the quantity of cat food she eats.

a) Lily's demand function is $q_d = \underline{\hspace{2cm}} - \underline{\hspace{2cm}}p$

For the rest of the problem, suppose that the price of cat food is $p = 5$.

b) At this price, Lily's optimal quantity is $q^* = \underline{\hspace{2cm}}$, and her resulting consumer surplus is $CS = \underline{\hspace{2cm}}$.

c) On the blank graph to the right, draw Lily's demand curve, and a line representing the price. Shade in the area that represents Lily's consumer surplus given her optimal quantity.



d) Explain as clearly as possible why the quantity you found is optimal, in the sense of maximizing Lily's happiness. Try to explain this so that what you say could be understood by someone who hadn't taken an economics class. For example, you should give clear definitions of any special economics terms you use, including, anything like 'surplus', 'marginal benefit', etc.

4. Market demand. Suppose that, in the market for mango chutney, there are 100 consumers, each with the same individual marginal benefit function, $MB_i = 8 - 2q_i$.

a) Each individual consumer has the demand function $q_{d_i} = \underline{\hspace{2cm}} - \underline{\hspace{2cm}}p$.

b) Market demand is given by the function $Q_d = \underline{\hspace{2cm}} - \underline{\hspace{2cm}}p$.

c) Market demand can also be represented by the marginal benefit function $MB = \underline{\hspace{2cm}} - \underline{\hspace{2cm}}Q$

5. Excise tax. Demand and supply in the market for fancy pasta (which is perfectly competitive, etc.) are determined by the marginal benefit function $MB = 150 - 3q$ and the marginal cost function $MC = 70 + q$, where q is the quantity of fancy pasta.

For parts (a) and (b), suppose that there is no tax.

a) In the market equilibrium, the price is $p^* =$ _____, and the quantity is $q^* =$ _____.

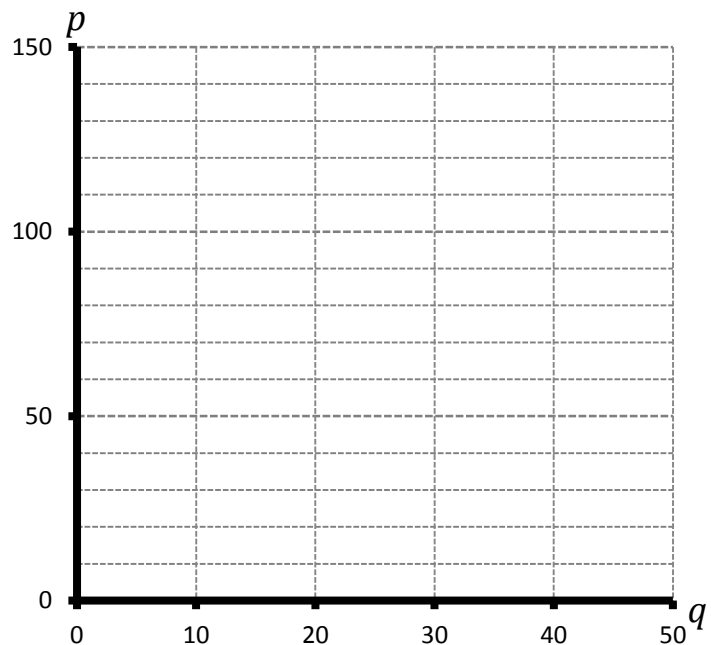
b) Consumer surplus is $CS =$ _____, producer surplus is $PS =$ _____, and total economic surplus is $TES =$ _____.

For parts (c) through (f), suppose that the government imposes a tax of \$40 per unit on fancy pasta.

c) In the market equilibrium, the price is $p^* =$ _____, and the quantity is $q^* =$ _____.

d) Consumer surplus is $CS =$ _____,
producer surplus is $PS =$ _____,
government revenue is $GR =$ _____,
total economic surplus is $TES =$ _____,
and deadweight loss is $DWL =$ _____.

e) On the blank graph to the right, draw the demand curve, supply curve, and the supply curve with the tax. Use different colors or patterns to shade in consumer surplus, producer surplus, government revenue, and deadweight loss.



f) Which side of the market is more elastic: supply or demand? (You can compare them at the equilibrium without the tax or with the tax; the answer doesn't change.) Explain clearly what is meant by elasticity; again, you want to do this so that someone without an economics background could understand you. Who loses more surplus as a result of the tax: consumers or producers? Comment on the connection between this and the elasticity comparison.

6. Price ceiling. Demand and supply in the market for rental housing (which is perfectly competitive, etc.) are determined by the marginal benefit function $MB = 150 - q$ and the marginal cost function $MC = 30 + 3q$, where q is the quantity of rental housing.

For parts (a) and (b), suppose that there is no price control.

a) In the market equilibrium, the price is $p^* =$ _____, and the quantity is $q^* =$ _____.

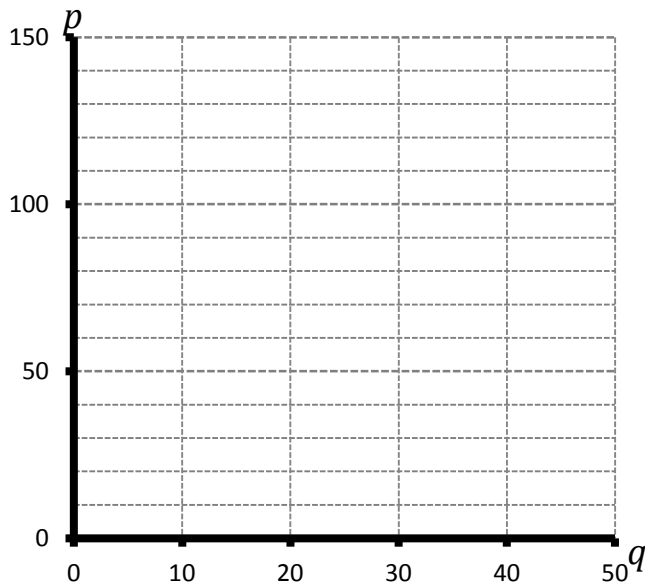
b) Consumer surplus is $CS =$ _____, producer surplus is $PS =$ _____, and total economic surplus is $TES =$ _____.

For parts (c) through (f), suppose that there is a price ceiling of \$90 per unit.

c) In the market equilibrium, the price is $p^* =$ _____, and the quantity is $q^* =$ _____.

d) Consumer surplus is $CS =$ _____, producer surplus is $PS =$ _____, total economic surplus is $TES =$ _____, and deadweight loss is $DWL =$ _____.

e) On the blank graph to the right, draw the demand curve, supply curve, and the price ceiling. Use different colors or patterns to shade in consumer surplus, producer surplus, and deadweight loss.



f) Explain clearly what economists mean by ‘efficiency’, and by ‘equity’. Explain the effect of a price ceiling on the efficiency of a competitive market. Consider the question of how a price ceiling might increase or decrease equity; the market for rental housing might be a good example to use.