

FIRST TEST. ECON 100C, SPRING 2016. NAME: _____

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

1. Discrete supply. 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 \$7.

q	TC	MC
1	2	
2	5	
3	9	
4	15	
5	23	
6	35	
7	53	

TR	PS

a) Fill in the MC column with the marginal cost of each last fish.

b) Fill in the TR (total revenue) and PS (producer surplus) columns.

c) How many fish should Sven sell? _____

d) 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 the optimal quantity.

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

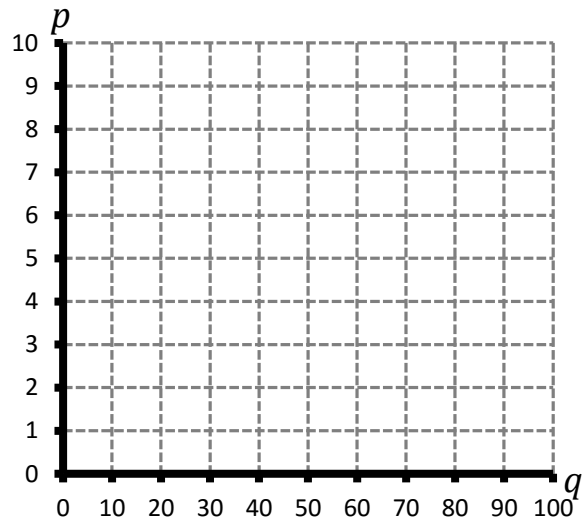
3. Continuous demand, part 1: individual demand. Lily enjoys eating cat food. Her total benefit and marginal benefit from cat food consumption are given by the functions $TB = 10q - \frac{1}{16}q^2$ and $MB = 10 - \frac{1}{8}q$, where q is the quantity of cat food she eats.

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.



4. Continuous demand part 2: market demand. Suppose that the market for cat food has 30 identical consumers, each with the same TB and MB functions as Lily.

a) The market demand function is $Q_d = \underline{\hspace{2cm}} - \underline{\hspace{2cm}}p$

b) This can also be represented by the market-level marginal benefit function $MB = \underline{\hspace{1cm}} - \underline{\hspace{1cm}}Q$.

5. Elasticity. Suppose that market demand for gumdrops is given by the function $q_d = 300 - 20p$. Find the price elasticity of demand at $p = 10$.

6. Excise tax. Demand and supply in the market for fancy pasta (which is perfectly competitive, etc.) are determined by the marginal benefit function $MB = 9 - \frac{1}{100}q$ and the marginal cost function $MC = 3 + \frac{1}{50}q$, 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 $q^* =$ _____.

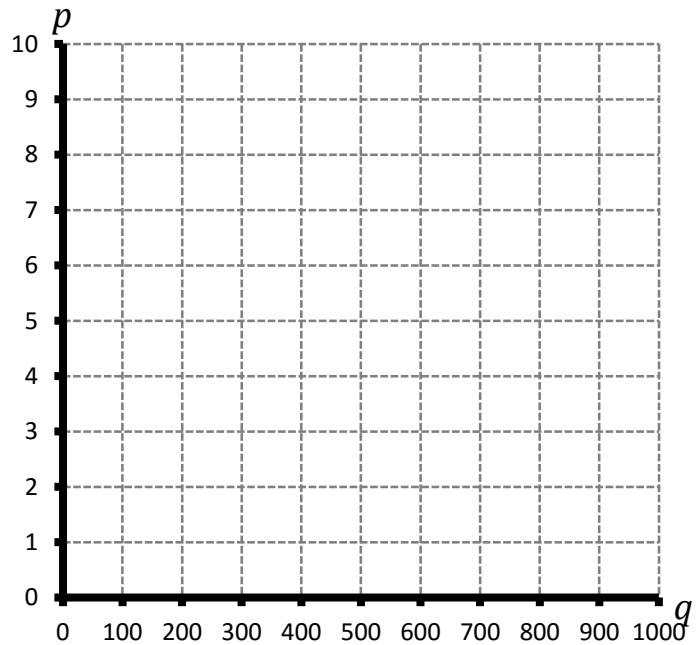
b) Consumer surplus is $CS =$ _____, producer surplus is $PS =$ _____, and total economic surplus is $TES =$ _____.

For parts (c) through (f), suppose that the government imposes a tax of \$3 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) Explain why total economic surplus decreases as a result of the tax. Also, explain why policy-makers might reasonably impose the tax anyway. Try to give two logically distinct arguments: one focused on efficiency concerns and one focused on equity concerns.

7. Price floor. Demand and supply in the market for red curry (which is perfectly competitive, etc.) are determined by the marginal benefit function $MB = 14 - \frac{1}{5}q$ and the marginal cost function $MC = 2 + \frac{1}{10}q$, where q is the quantity of red curry.

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 $q^* =$ _____.

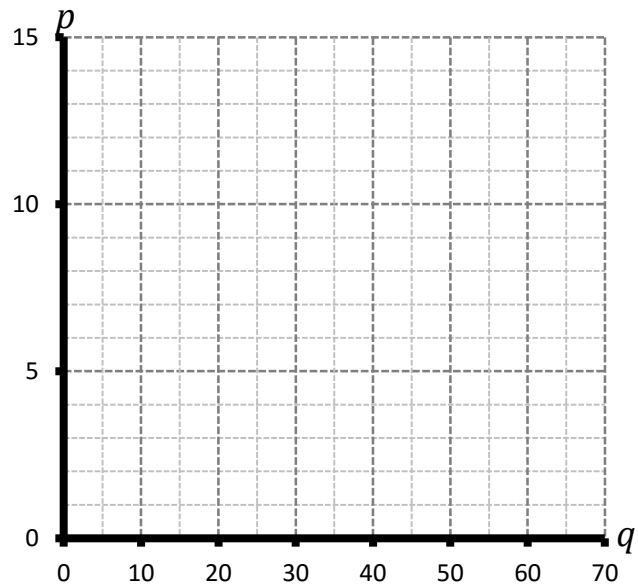
b) Consumer surplus is $CS =$ _____, producer surplus is $PS =$ _____, and total economic surplus is $TES =$ _____.

For parts (c) through (f), suppose that there is a price floor of \$8 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 floor. Use different colors or patterns to shade in consumer surplus, producer surplus, and deadweight loss.



f) Explain why total economic surplus decreases as a result of the price floor. Also, explain why policy-makers might reasonably choose to enact this price floor anyway; that is, if they do so, what does it imply about their relative valuation of one dollar of consumer surplus versus one dollar of producer surplus.