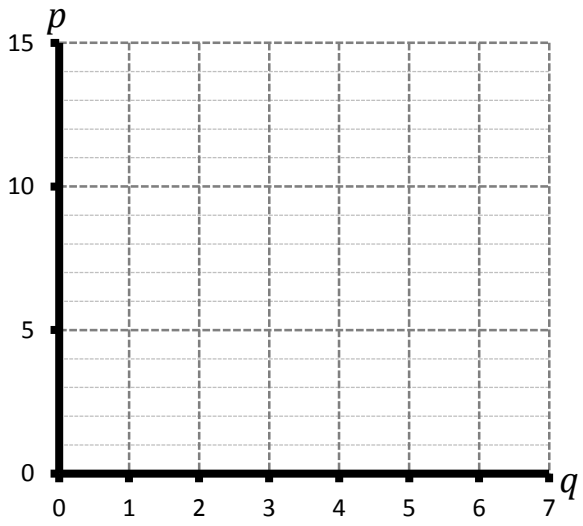
FIRST TEST. ECON 100B, FALL 2015. NAME: _____

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	6	
3	12	
4	20	
5	30	
6	42	
7	56	

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.

e) Explain as clearly as possible (as if to your roommate, i.e. from the beginning to the end in an intelligible logical progression, defining any jargon you use) why the area you shaded on the graph represents producer surplus.

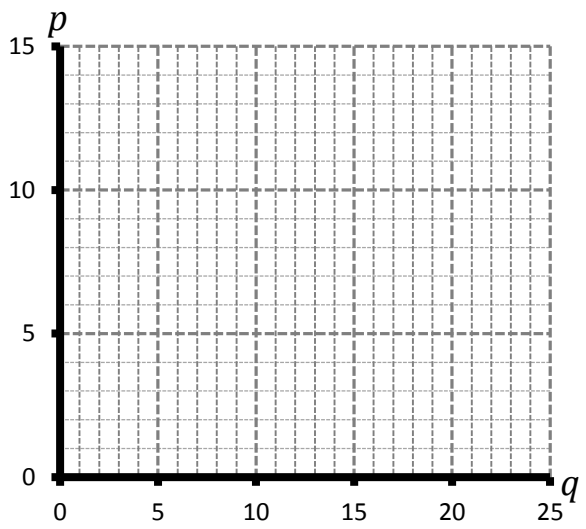
2. Continuous demand. Lily enjoys eating cat food. Her total benefit and marginal benefit from cat food consumption are given by the functions $TB = 12q - \frac{1}{4}q^2$ and $MB = 12 - \frac{1}{2}q$, where q is the quantity of cat food she eats.

a) Lily's demand function is $q_d =$ _____ $-$ _____p

For the rest of the problem, suppose that the price of cat food is $p = 7$.

b) At this price, Lily's optimal quantity is $q^* =$ _____, and her resulting consumer surplus is $CS =$ _____.

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.

3. Excise tax. Demand and supply in the market for fancy pasta (which is perfectly competitive, etc.) are determined by the marginal benefit function $MB = 50 - \frac{1}{3}q$ and the marginal cost function $MC = 10 + q$, 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 $q^* =$_____.

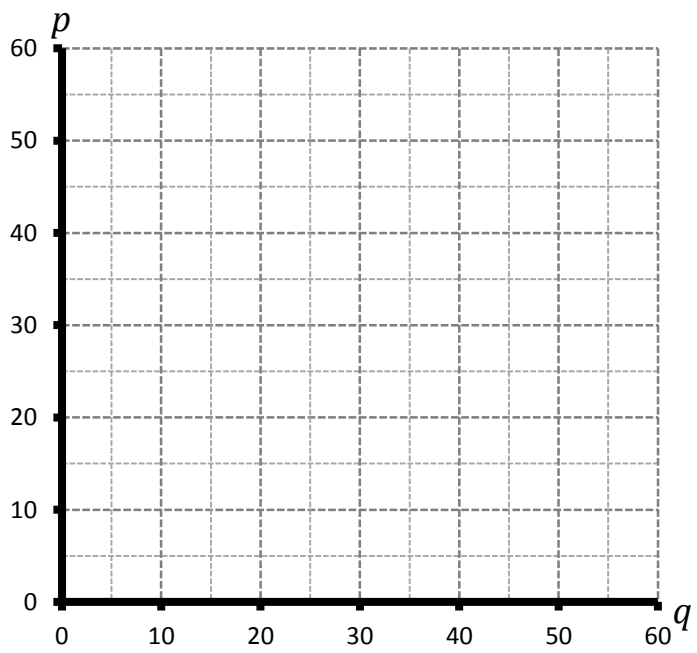
b) Consumer surplus is $CS =$_____, producer surplus is $PS =$_____, and total economic surplus is $TES =$_____.

For parts (c) through (f), suppose that the government imposes a tax of $16 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) Who gains as a result of the tax, and who loses? How much does each group gain or lose? Which is greater, the revenue gained by the government as a result of the tax, or the surplus lost by consumers and producers? Explain as clearly as possible (as if to your roommate, defining all terms) why this is true in this case (and most others).

4. Price ceiling. Demand and supply in the market for red curry (which is perfectly competitive, etc.) are determined by the marginal benefit function $MB = 30 - q$ and the marginal cost function $MC = 10 + q$, 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 $q^* =$_____.

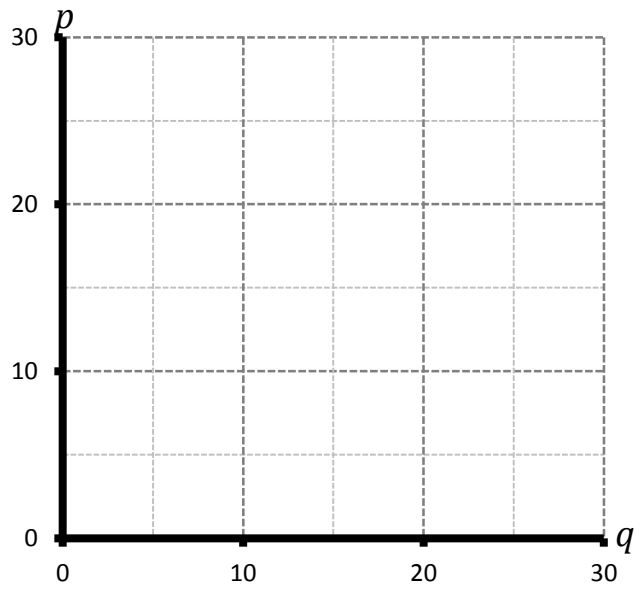
b) Consumer surplus is $CS =$_____, producer surplus is $PS =$_____, and total economic surplus is $TES =$_____.

For parts (c) through (f), suppose that there is a price ceiling of $14 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) Who gains from this price ceiling, and who loses? How much does each group gain or lose? Which is greater in dollar terms, the gain or the loss? Explain very clearly (as if to your roommate, defining all terms) why this is true in this case (and most others).