Problem set 1, due Monday 9/16/13

1. Suppose that Keara's total benefit from coffee drinks per day is given by the table on the left.

coffee drinks	total benefit (willingness to pay)
1	$12
2	$17
3	$20
4	$21
5	$21

price range	quantity demanded
> $_____	0
$_____ - $_____	1
$_____ - $_____	2
$_____ - $_____	3
$0 - $_____	4

a) If the price of a coffee drink is $4.50, then how many should Keara buy? _____

b) What will Keara's consumer surplus be when the price is $4.50? _____

c) Fill in the missing spaces in the quantity demanded table (on the right) above.

2. Building a park in an empty lot owned by the city will cost $10,000 in construction, landscaping, etc. There are 300 people who would benefit from the park, and each of them would be willing to pay a maximum of $100 to have it. A private developer is willing to pay $X to the city to acquire the same land, if the park isn't built. Assuming that public money will be spent on worthwhile things, ignoring distributional issues, etc., then the park should be built at long as X is less than _____.

3. Suppose that Kristin's marginal benefit for cinnamon cereal is given by the function $MB = 10 - 2q$, where q is the quantity of cereal she consumes (in pounds).

a) If the price of cereal is $2 per pound, then Kristin should consume _____ pounds of cereal.

b) If she does this, then her total consumer surplus will be _____.

4. Suppose that Erin is a producer of beer, with a total cost function $TC = 20Q + \frac{1}{6}Q^2$, and marginal

cost function $MC = 20 + \frac{1}{3}Q$, where Q is her production of beer, in gallons.

a) If the price of beer is $40 per gallon, she should produce _____ gallons, to maximize profit.

b) Her supply function is $Q_S =$ _____ + _____ P, where P is the price of beer per gallon.

c) If the price of beer is $40 per gallon, how much producer surplus can she get? _____

weekends	1	2	3	4	5	6
total benefit	$550	$1000	$1350	$1600	$1750	$1800

5. Suppose that Judy has a country house, and she is deciding how many weekends to spend there this

summer. The bottom row in the table above gives the total benefit (in dollar amounts, and not taking

cost into account) that she will get from going to the house for different numbers of weekends. For

every summer weekend that she doesn't go to the house, she can get $200 of income by renting it to

someone else. If travel to and from the house costs $100 per weekend, how many weekends should she

spend there? _____

6. Suppose that the market for wine behaves like a typical, perfectly competitive, 'textbook' supply

and demand model, with smoothly increasing marginal cost and decreasing marginal benefit. Fill in

each of the blanks below with "up" or "down".

a) If the supply curve shifts to the right, then equilibrium price of wine will go _____, and

equilibrium quantity will go _____.

b) If grapes (an input in wine production) become more expensive, then we would expect the

equilibrium price of wine to go _____ and the equilibrium quantity of wine to go _____.

c) Suppose that wine and beer are substitutes. If the price of beer declines, then, we would expect the

equilibrium price of wine to go _____ and the equilibrium quantity of wine to go _____.

7. The market for blue fuzz is characterized by the marginal benefit function $MB = 100 - \frac{1}{5}q$, and the

marginal cost function $MC = 10 + \frac{1}{10}q$, where q is the quantity of blue fuzz produced and consumed.

a) Assuming that the market is competitive, etc., the equilibrium quantity of blue fuzz is _____,

and the equilibrium price is _____.

b) In the equilibrium, consumer surplus is _____, and producer surplus is _____.

c) The market demand curve can be represented by the equation $q_d =$_____, and the market

supply curve can be represented by the equation $q_s =$_____.

d) On the graph below, draw the demand curve and the supply curve. Shade the areas that represent

consumer surplus and producer surplus.