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

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

1. Monopoly. I took a photograph of a chicken, so I have the monopoly on selling it in poster form. I must sell all of the posters at the same price. Demand for my chicken posters is defined by the marginal benefit schedule given in the second column below. Each poster costs $5 to produce.

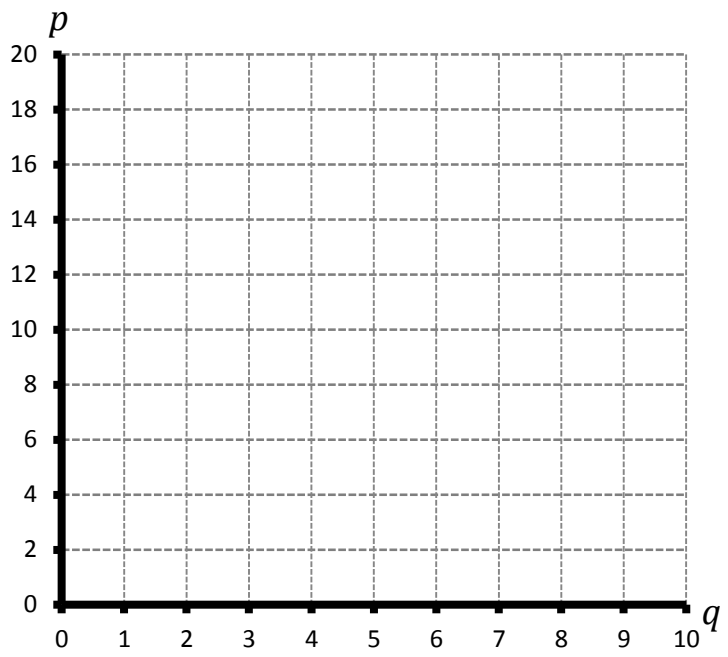
a) Fill in the columns for total revenue (R) and marginal revenue (MR).

b) To maximize my profit, I should sell a quantity of _____ posters, at a price of _____. At this quantity and price, consumer surplus will be _____. When added to my producer surplus of _____, this gives a total economic surplus of _____.

c) If I lost my copyright, so that anyone could make and sell posters of my chicken photo for a cost of $5 each, the equilibrium price would be _____, the equilibrium quantity would be _____, consumer surplus would be _____, producer surplus would be _____, and total economic surplus would be _____.

d) Draw the marginal benefit (MB), marginal revenue (MR), and marginal cost (MC) functions in the blank graph below. Shade in the area corresponding to the deadweight loss caused by my being a monopolist rather than a group of perfectly competitive firms.

q	MB	R	MR
1	20		
2	18		
3	16		
4	14		
5	12		
6	10		
7	8		
8	6		
9	4		
10	2		

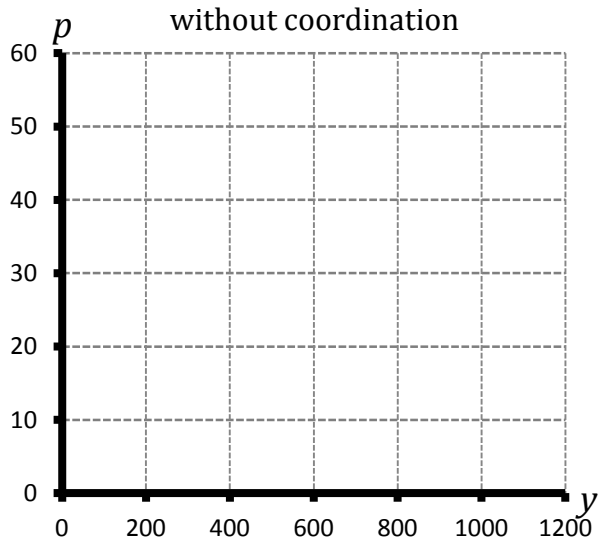


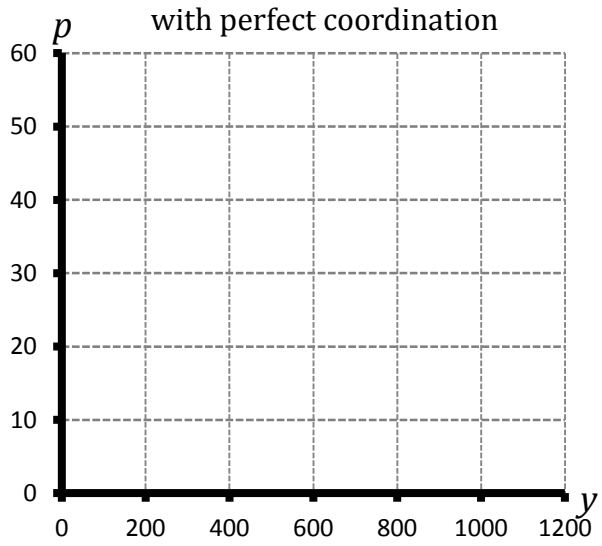
2. Public goods. Five roommates are deciding how much gunpowder to buy for the defense of their dorm suite. Each individual has the marginal benefit function $MB_i = 12 - \frac{1}{100}y$, where y is the quantity of gunpowder they buy, in pounds. The marginal cost of gunpowder is $MC = 8$.

a) If there is no possibility of collective action, and each person must decide privately how much gunpowder to purchase, then the equilibrium amount of gunpowder will be $y^* =$_____, and total economic surplus will be $TES(y^*) =$_____.

b) However, the socially optimal quantity of gunpowder is $y^o =$_____, which gives a total economic surplus of $TES(y^o) =$_____. Thus, the amount of surplus that can be gained through collective action is _____.

c) On both graphs below, draw the MB_i, MSB, and MC. On the left graph, mark y^*, and shade in the area representing $TES(y^*)$. On the right graph, mark y^o, and shade in the area representing $TES(y^o)$.





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:

$$MB = 27 - \frac{3}{10}q \qquad MC = 7 + \frac{1}{10}q \qquad MEC = 4$$

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.

$q^* =$ _____ $p^* =$ _____ $CS^* =$ _____

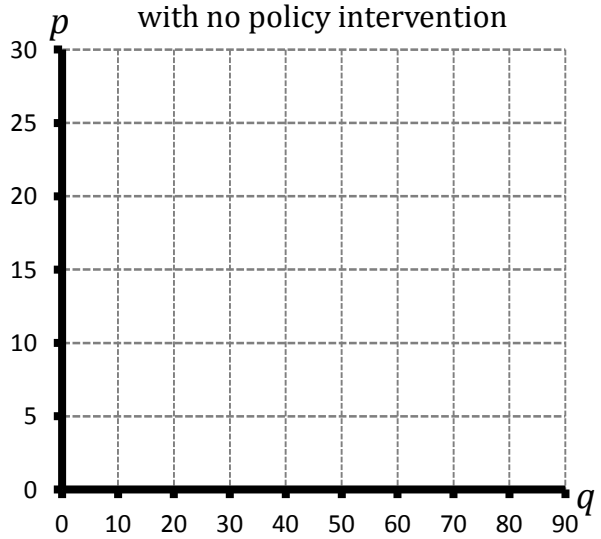
$PS^* =$ _____ $EC^* =$ _____ $TES^* =$ _____

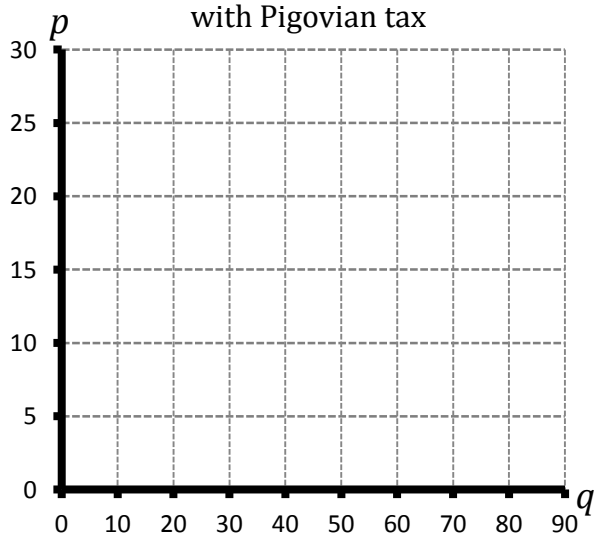
b) Pigovian tax. To maximize total economic surplus, the government should impose a tax of $\tau^o =$ _____ per unit. Given this, find the equilibrium quantity, price, consumer surplus, producer surplus, external cost, government revenue, and total economic surplus.

$q^o =$ _____ $p^o =$ _____ $CS^o =$ _____

$PS^o =$ _____ $EC^o =$ _____ $GR^o =$ _____ $TES^o =$ _____

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





4. Reflection questions

a) In Problem 1 above, explain as clearly as you can why the monopolist's marginal revenue from selling the fourth poster (MR) is strictly less than what the fourth person is willing to pay (MB). See if you can account precisely for the specific numerical difference between the two values.

b) In Problem 3 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 are they made worse off, altogether?

e) What is meant by a "non-excludable" good? Give an example of a good that is at least somewhat non-excludable, explaining your reasoning.

f) What is meant by a "non-rival" good? Give an example of a good that is at least somewhat non-rival, explaining your reasoning.