Exercise session 5

1. A paper plant produces water pollution during the production process. If the government forces the plant to internalize the negative externality, then the
   a. supply curve for paper would shift to the right.
   b. supply curve for paper would shift to the left.
   c. demand curve for paper would shift to the right.
   d. demand curve for paper would shift to the left.
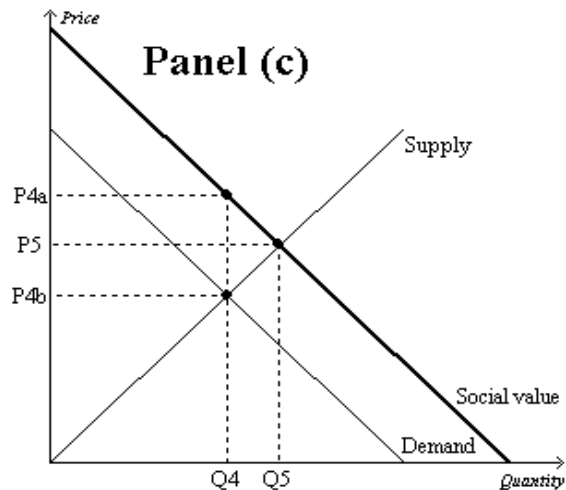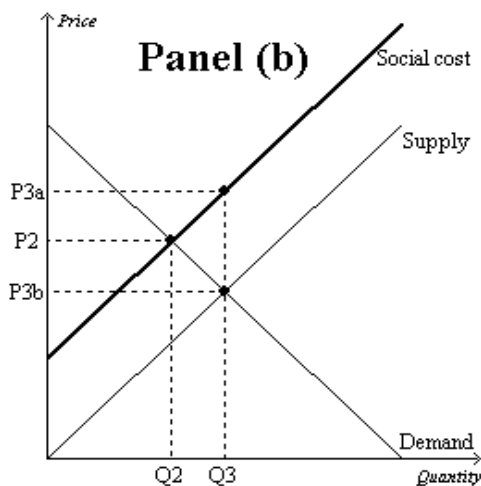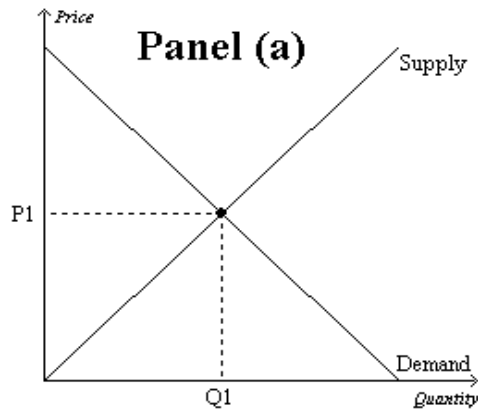
2. The following table shows the private value, private cost, and social value for a market with a positive externality.

Quantity	Private Value	Private Cost	Social Value
1	27	6	34
2	24	10	31
3	21	14	28
4	18	18	25
5	15	22	22
6	12	26	19

   a) What is the equilibrium quantity of output in this market?
   b) What is the socially-optimal level of output in this market?
   c) How large would a subsidy need to be in this market to move the market from the equilibrium level of output to the socially-optimal level of output?

3. Which of the following is true of markets characterized by positive externalities?
   a. Social value exceeds private value, and market quantity exceeds the socially optimal quantity.
   b. Social value is less than private value, and market quantity exceeds the socially optimal quantity.
   c. Social value exceeds private value, and market quantity is less than the socially optimal quantity.
   d. Social value seldom exceeds private value; therefore, social quantity is less than private quantity.

4. Which of the following activities, if any, represents an external cost?
   a. The reduction in the incidence of chicken pox when children are inoculated against the disease.
   b. The damage to a person's health from secondhand smoke.
   c. The increase in local property values when the city creates a neighborhood park.
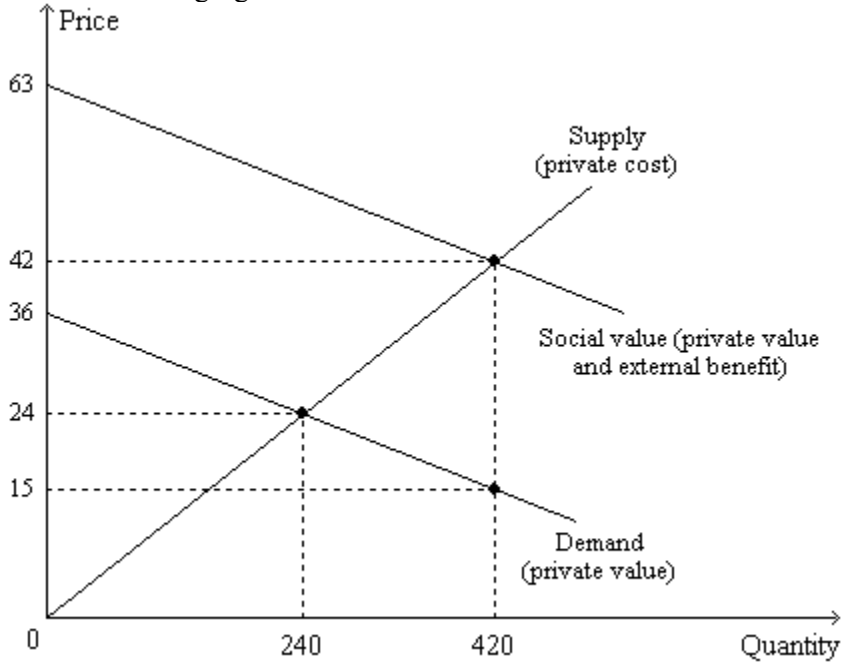   d. The price you pay for the prime rib that you consume at a local restaurant.

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5) In the following figure

Panel (a)
Price
Supply
P1
Q1
Demand
Quantity

Panel (b)
Price
Social cost
Supply
P3a
P2
P3b
Q2 Q3
Demand
Quantity

Panel (c)
Price
Supply
P4a
P5
P4b
Social value
Q4 Q5
Demand
Quantity

a) Which graph represents a market with no externality?

b) Which graph represents a market with a positive externality?

c) Which graph represents a market with a negative externality?

d) How much is the market equilibrium price and quantity in **Panel (b)?**

e) The overuse of antibiotics leads to the development of antibiotic-resistant diseases. Therefore, the market for antibiotics is shown in…

f) The installation of a scrubber in a smokestack reduces the emission of harmful chemicals from the smokestack. Therefore, the market for smokestack scrubbers is shown in…

g) Which of the following is correct?

    a. A tax would move the market in Panel (b) and the market in Panel (c) closer to the socially optimal outcome.

    b. A subsidy would move the market in Panel (b) and the market in Panel (c) closer to the socially optimal outcome.

    c. A tax would move the market in Panel (b) closer to the socially optimal outcome, but a subsidy would move the market in Panel (c) closer to the socially optimal outcome.

    d. A subsidy would move the market in Panel (b) closer to the socially optimal outcome, but a

tax would move the market in Panel (c) closer to the socially optimal outcome.

6. In the following figure:

a) What type of market is represented?
b) Which of the following statements is correct?

    a. The private value of the 420th unit of output is $15.

    b. The social value of the 420th unit of output is $42.

    c. The external benefit of the 420th unit of output is $27.

    d. All of the above are correct.

c) "The social value of the last unit produced exceeds the private cost of the last unit produced by $13.50." This statement is correct at which quantity of output?

d) On the

    a. 390th unit of output, private value exceeds private cost.

    b. 390th unit of output, private value exceeds external value.

    c. 450th unit of output, private value exceeds social value.

    d. 450th unit of output, private cost exceeds social value.

e) Taking into account private value *and* external benefits, how much is the maximum total surplus that can be achieved in this market? 420*63/2=13230