Your name (first name, then last name): _____

Your TA's name: _____

SUNY-Binghamton Economics 160, Principles of Microeconomics, Christopher Hanes
Problem set 9 Oligopoly, externalities

1) Look at the Excel spreadsheet. It is like the one we used in class to talk about Cournot competition.
Suppose two firms produce a good. The demand curve for the good is described by the first two columns in Table 1 (the upper table).

a) Suppose the two firms can collude and act as a cartel. Under the cartel agreement,
what would be the price?   _____

what would be the total quantity of production from the two firms taken together?   _____

how much would each firm produce?   _____

how much profit would each firm receive?   _____

b) Look at the lower panel, Table 2, of the spreadsheet. In the gray box, you can type in a hypothetical level of production for firm A. The second column of the table gives hypothetical levels of production for firm B. The last column gives the profit that firm B would receive if firm A produced the quantity you typed into the gray box, and firm B produced the quantity in the second column.
If both firms hold to the cartel agreement, how much profit will firm B receive?   _____

If firm A holds to the cartel agreement, what quantity of production would maximize B's profit? _____

Is the cartel agreement a Nash equilibrium (yes or no)?   _____

One of the following situations is a Nash equilibrium. Use Table 2 to figure out which one it is. Circle it below.
    Firm A produces 18, firm B produces 18
    Firm A produces 20, firm B produces 20
    Firm A produces 22, firm B produces 22
    Firm A produces 24, firm B produces 24
    Firm A produces 26, firm B produces 26

In this Nash equilibrium, what is the price?   _____

What would the Nash equilibrium price be if the two firms interacted in "Bertrand" competition?   _____

What would the equilibrium price be if the market were perfectly competitive?   _____

2) Suppose you live in a dorm, in a double, with a room-mate. Your room-mate wants to drink beer in the room.

(continued on next page)

Your room-mate would be willing to pay $50 to be able to drink in the room. You would rather not have anyone drink beer in the room. You would be willing to pay $40 to not have anyone drink beer in the room.

a) What situation would maximize total surplus: *allow/not allow* drinking in the room: _____

b) Suppose dorm rules allow drinking in rooms. Drinking *will/will not* occur: _____

      Who will receive money? *You/your room-mate/no one*: _____

c) Suppose dorm rules do not allow drinking in rooms. But of course if you don't squeal, no one will know.

      Drinking *will/will not* occur: _____

      Who will receive money? *You/your room-mate/no one*: _____

3) Repeat question 2). As before, your room-mate would be willing to pay $50 to be able to drink in the room. But now you would be willing to pay $60 (not $40) to not have anyone drink beer in the room.

a) What situation would maximize total surplus: *allow/not allow* drinking in the room: _____

b) Suppose dorm rules allow drinking in rooms. Drinking *will/will not* occur: _____

      Who will receive money? *You/your room-mate/no one*: _____

c) Suppose dorm rules do not allow drinking in rooms. But of course if you don't squeal, no one will know.

      Drinking *will/will not* occur: _____

      Who will receive money? *You/your room-mate/no one*: _____