Problem 1

There are two identical brookie bakeries A and B (a brookie is a layer of cookie on top of a layer of brownie) facing the demand function $Q = 200 - 2P$ with $MC = 25$ each.

(a) Suppose competition is a single-period Bertrand game. Find the equilibrium price and quantity for each firm. Will they collude?

(b) Suppose competition is an infinitely repeated Bertrand game in which firms use an ultimatum strategy. The discount factor is $\delta = .9$. Find the equilibrium price and quantity for each firm. Will they collude?

(c) Suppose competition is a single-period Cournot game. Find the equilibrium price and quantity for each firm. Will they collude?

(d) Suppose competition is an infinitely repeated Cournot game in which firms use an ultimatum strategy. The discount factor is $\delta = .9$. Find the equilibrium price and quantity for each firm. Will they collude?

(e) True or false? Collusion should be easier to maintain if:

(i) Other firms are likely to enter next period.

(ii) It is easy to observe the prices charged by the other collusion members.

(iii) Firms equally value the future relative to the present.

(iv) Firms must make decisions about how much to produce far in advance.

(v) One of the firms needs cash in the short term to avoid bankruptcy.

Problem 2

Answer whether the following statements are true or false, and explain your answer.

(a) A firm with market power will create deadweight loss when it maximizes profits.

(b) A reputation as an incumbent who fights entry is more effective as a barrier to entry against small firms than against large firms.

(c) Intertemporal price discrimination and network externalities create an incentive for firms to set high prices initially followed by lower prices later.

Problem 3

Assuming that the market demand curve and marginal costs are identical in all cases, circle the correct ranking of equilibrium prices. (NE means "Nash equilibrium.")

(a) Bertrand NE $<$ Cournot NE $<$ Bertrand Collusion $<$ Cournot Collusion

(b) Bertrand NE $<$ Cournot NE $<$ Bertrand Collusion $=$ Cournot Collusion

(c) Cournot NE $<$ Bertrand NE $<$ Cournot Collusion $<$ Bertrand Collusion

(d) Cournot NE $<$ Bertrand NE $<$ Cournot Collusion $=$ Bertrand Collusion