1. Assume the firms in an industry have the same marginal cost of zero (i.e. MC=0). The demand function in the industry is $P = a - bQ$, where P is the price and Q is the quantity. Please calculate the equilibrium price (P*) and quantity (Q*) for the industry, and the total profit and quantity for each firm for the following market structures:

   (1) Cournot duopoly　(13%)

   (2) Bertrand duopoly　(13%)

2. We can think of US and Japan trade policies as a prisons' dilemma. The two countries are considering policies to open or close their import markets. The pay-off matrix is shown below.

		Japan	
		Open	Close
US	Open	(10, 10)	(5, 5)
	Close	(-100, 5)	(1, 1)

   (1) Assume that each country knows the payoff matrix and believes that the other country will act in its own interest. Does either country have a dominant strategy? What will be the equilibrium policies if each country acts rationally to maximize its welfare?　(12%)

   (2) Now assume that Japan is not certain that the US will behave rationally. In particular, Japan is concerned that US politicians may want to penalize Japan even if that does not maximize US welfare. How might this concern affect Japan's choice of strategy? How might this change the equilibrium?　(12%)

3. Suppose a profit-maximizing monopolist is producing 800 units of output and is charging a price of $40 per unit.

   (1) If the elasticity of demand for the product is -2, please find the marginal cost of the last unit produced.　(9%)

   (2) What is the firm's percentage markup of price over marginal cost?　(8%)

   (3) Suppose that the average cost of the last unit produced is $15 and the firm's fixed cost is $2000. Please find the firm's profit.　(8%)

4. A firm produces a product in a competitive industry and has a total cost function: $C = 50 + 4q + 2q^2$. At the given market price of $20, the firm is producing 5 units of output.

   (1) Is the firm maximizing its output? Why?　(12%)

   (2) What quantity of output should the firm produce in the long run?　(13%)