1. A regulated monopolist serves two customers whose demand curves are depicted in the diagram below. Mr. Small's demand curve is the line AEBL. Mr. Large's demand curve is the line AFIR. The monopolist's marginal cost per unit is equal to the distance OC. The uniform (linear) price at which the firm breaks even (i.e., the Average Cost price) is given by the distance OP.

(a) In terms of areas on the diagram, what are the monopolist's fixed costs?

(b) How much deadweight loss could be eliminated if the monopolist were allowed to engage in 3rd degree price discrimination?

(c) How much could deadweight loss be reduced by offering a declining block tariff with a first block equal to the initial price OP?

(d) Under what conditions would the monopolist be able to eliminate deadweight loss in this market using a two part tariff?

2. A regulated firm producing $y_1$ and $y_2$ has the following cost structure: $C(y_1,0) = 2y_1$; $C(0,y_2) = 100 + y_2$; and $C(y_1,y_2) = 100 + y_1 + y_2$. The demand schedules for the two services are given by: $P_1 = 31 - 2y_1$ and $P_2 = 31 - y_2$. 
(a) Demonstrate that this cost function exhibits both economies of scale and economies of scope.

(b) What are the "first best," surplus maximizing prices? How much does the firm make (or lose) at those prices?

(c) In this example, if the prices were set at their "second best," Ramsey levels, would $P_1$ be greater than, equal to, or less than $P_2$? Explain. (HINT: This is easier than it looks.)

(d) Suppose that the demand schedule for service 1 remained as above, but the demand for service 2 was perfectly inelastic at $y_2 = 10$ for all $P_2 = 13$, with nothing demanded for $P_2 > 13$. Calculate the optimal break-even (Ramsey) prices for this case. Explain your answer.

(e) Use the appropriate tests for cross-subsidization to determine whether or not the prices calculated in part (d) are subsidy-free.

(f) What is the highest price that can be charged for service 1 without providing a profit incentive for entry? Explain.