Problem Set #1

Sonoma State University
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Economics 411- Seminar in Public Economics

(1) Suppose you have three individuals in a community with the following demands for fire protection in hours per month:
\[ q_1 = 300 - \frac{P}{5} \]
\[ q_2 = 300 - \frac{P}{7} \]
\[ q_3 = 420 - \frac{P}{5} \]

The marginal cost of fire protection is given by \( MC = 2500 + 2Q \)

(a) Derive the competitive equilibrium provision of fire protection per month. Explain fully and show graphically.

(b) Derive the efficient provision of fire protection per month using the Samuelson rule. Explain fully and show graphically.

(c) Why do the levels of fire protection differ in questions a & b? Explain fully.

Suppose that it is decided to finance the efficient level of fire protection through voluntary contributions.

(d) If a “head” tax is used, what is the amount of voluntary contribution needed to finance the efficient level of fire protection?

(e) Will the efficient level of fire protection be provided if each member of the community is asked to contribute the amount in part d? Explain why or why not.

(f) If a “Lindahl” tax is used, what is the amount of voluntary contribution needed to finance the efficient level of fire protection?

(g) Does the Lindahl tax result in a shortage or surplus of funds needed to cover the cost of the efficient level of fire protection?

(h) Discuss the problems associated with instituting a Lindahl pricing scheme.