ECONOMICS 1A: PROBLEM SET 9
The Role of Government

Externalities

1. (a) List three goods or activities with negative externalities.

(b) List three goods or activities with positive externalities.

2. Suppose the market for gasoline in California is competitive. Demand for gasoline per day is given by $Q_d = 20 - 2P$, where P is the price in $ per gallon, and demand is measured in millions of gallons per day. The supply of gasoline is given by $Q_s = -4 + 10P$.

(a) Work out the free market quantity and price.

(b) Suppose that each gallon of gasoline consumed imposes **external costs** from air pollution, global warming, environmental damage, and noise of $2. Calculate the efficient quantity consumed, and the efficient free market price.

(c) What is total social surplus at the free market price, and at the efficient level of production?

(d) Show that a tax of $2 on gasoline consumption will lead to the efficient outcome.

(e) Explain why other measures to limit gasoline consumption such as fuel economy requirements or emission controls will be less efficient than a gasoline tax.

Public Goods

3. Suppose the demand curve for Davis Public Radio Station KDAV is given per hour by

$$Q = 1{,}000 - 100P$$

Suppose the cost of being on the air per hour is a fixed $2,000.

(a) Show that it is efficient for KDAV to be on the air.

(b) KDAV funds itself by periodic fund raising drives where annoying appeals to people's public spiritedness replace the regular programming. Explain why this is inefficient.

(c) The radio tries to promote giving by noting that if every listener were to refuse to donate, then there would be no service. What should a self-interested listener do?

(d) What is a more efficient way to fund KDAV?

(e) Under the more efficient fund raising scheme how can the value of KDAVs services be estimated?