Homework

Price elasticity of demand is the responsiveness of quantity demanded for buyers to changes in price and price elasticity of supply is the responsiveness of quantity supplied to changes in price. The higher price elasticity is, the higher the responsiveness.

1. Why do governments tax goods and services with an inelastic demand?

Deadweight loss is the dollar value of the loss of wealth due to fewer transactions following the introduction of a tax.

1. Hotel rooms in Smalltown go for $100 per night, and 1,000 rooms are rented on a typical day.
2. To raise revenue, the mayor decides to charge hotels a tax of $10 per rented room. After the tax is imposed, the going rate for hotel rooms rises to $108, and the number of rooms rented falls to 900. Calculate the amount of revenue this tax raises for Smalltown and the deadweight loss of the tax. (Hint: The area of a triangle is ½ x base x height or ½ x t x ∆Q)
3. The mayor now doubles the tax to $20. The price rises to $116, and the number of rooms rented falls to 800. Calculate tax revenue and deadweight loss with this larger tax. Are they double, more than double, or less than double? Explain.
4. Suppose that a market is described by the following supply and demand equations:

Qs=2P

Qd=200-2P

1. Solve for the equilibrium price and the equilibrium quantity.
2. Suppose that a tax of T=20 is placed on buyers, so the new demand equation is

Qd=200-2(P+T)

Solve for the new equilibrium. Find the price received by sellers, the price paid by buyers, and the quantity sold. Compare to part a.

1. Tax revenue is TxQ. Use your answer to part (b) to solve for tax revenue.
2. Define deadweight loss.
3. The deadweight loss of a tax is the area of the triangle between the supply and demand curves. Recalling that the area of a triangle is ½ x base x height, solve for deadweight loss. (Hint: Looking sideways, the base of the deadweight loss triangle is T, and the height is the difference between the quantity sold with the tax and the quantity sold without the tax or ∆Q.)