

HOMework 1

ECON 661

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Problem 1. (15 points) Explain what is represented by the slope of the budget line and the slope of the indifference curve. How does an increase in income affect the slopes?

Problem 2. (30 points) Suppose your state currently provides an income guarantee under TANF of \$5,000 and a benefit reduction rate of 40%. The typical recipient can work up to 2,000 hours per year at a wage of \$10 per hour.

2.A Graph a TANF participant's budget constraint without and with the TANF program.

2.B If the recipient works 300 hours per year, what is the effective take-home wage rate?

2.C Suppose the income guarantee is increased to \$7000 and the reduction rate is increased to 70%. Draw the new budget constraint.

2.D Which of these two income guarantee programs is more likely to encourage work? Explain why.

Problem 3. (35 points) Suppose the factory Puffs, Inc. produces wigs. As a by-product of this wig production, they also produce dangerous emission of toxic gases (as a result of the strong glue used to hold hair in place). The De-Lite car factory, down the road, experience negative externality from this production process. Suppose that the supply curve (private marginal cost) for the wig factory is $X = (2/5)P - 2$, and it faces a market demand of $X = 15 - P/2$. The marginal damage caused by the production of wig can be written as $X = P - 1/2$.

3.A Find the equilibrium price and quantity in the market for wigs. Graph the supply and demand curves and show the market equilibrium.

3.B Find the socially optimal level of wigs and the corresponding price. Graph the marginal damage curve, the social marginal cost curve for wigs production and show the efficient level of production.

3.C If there is no intervention in the production of wigs, what is the deadweight loss associated with the private production of wigs?

3.D How much should the wig factory be taxed per wig to induce the firm to produce the efficient level of wigs?

Problem 4. (20 points) Suppose that the market demand curve is given by $Q = 100 - P$ and the market supply curve is given by $Q = 3P$.

4.A What is the deadweight loss that would result if the government were to institute a price cap of \$20 in this market?

4.AB What is the deadweight loss that would result if the government were to institute a price cap of \$30 in this market?