Assignment 3
Due in tutorials in the week of November 3RD.

Problem 18 from Ch. 10 of the required textbook. (3 points)

True or False. If either supply or demand is perfectly inelastic, a per unit tax on producers will not create any dead weight loss[1]. (3 points, use diagrams for full marks)

Problem 1. (4 points).
Market demand is $P^D = 15 - .75Q$ and market supply is $P^S = .25Q$.

a) Suppose government imposes a quota of 10 units. Calculate the market price and quantity after the quota is imposed. Use a diagram to show the welfare impact of the quota: who gained and who lost as a result of the quota, show the dead weight loss on the diagram.

b) Now suppose that government introduces a price floor in this market: the price is not allowed to go below 7.5. What will be resulting market price and quantity in this case? Show the impact of this policy on a diagram.

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Problem 2. (10 points)
Consider a competitive market with demand given by $P^D = 100 - 2Q$ and supply given by $P^S = 10 + Q$.

a) Find competitive equilibrium price and quantity P^* and Q^*. What are the consumer and producer surplus?

b) Suppose government introduces as per unit tax of $t = 15$ on producers. Find the quantity traded in the market after tax Q_t. Find the price paid by consumers P_t and price received by producers after tax P_S.

c) Calculate consumer and producer surplus, tax paid by consumers, tax paid by producers, and the total tax revenue to the government, find the dead weight loss associated with the tax.

d) Calculate price elasticity of demand and supply in the competitive market equilibrium using point elasticity formula. Now calculate what percentage of tax revenue is paid by the consumers and what percentage is paid by the producers. What can you say about the relationship between the elasticity of supply and demand and the shares of tax paid by consumers and producers?

e) Show your results on a diagram. In particular indicate competitive equilibrium, after tax quantity and prices, after tax consumer and producer surplus, government revenue and the dead weight loss.

    CHECKING YOUR CALCULATIONS for PR.2. After you obtain Q_t you can check whether it is correct: plug it into the demand and the supply equations, the prices that you get should be different by exactly 15: $P_S = P_t - 15$. After tax CS + PS + GR + DWL should be equal to the CS+PS before tax.

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[1]You need two diagrams: one for inelastic supply and the other one for the inelastic demand.