

Intermediate Microeconomic Theory
ECN 100B, Fall 2019
Professor Brendan Price

TA Section Problems #1
(Week of Monday, September 30)

1 Tax and tip

Throughout this problem, “price” means the amount paid by a consumer to a barber for a haircut itself, not including any taxes or tips that the consumer pays in addition to the price.

New York City has a perfectly competitive market for haircuts, with demand for haircuts given by $p_D(Q) = 30 - 2Q$ and supply of haircuts given by $p_S(Q) = 12 + Q$.

New Yorkers (like me) have a reputation for being rude, so let’s assume that nobody tips their barber unless they are legally obligated to do so.

- a. Compute the equilibrium price and quantity.
- b. Compute the consumer surplus, producer surplus, and deadweight loss.
- c. Suppose that the city council imposes a \$6 tax on haircuts, paid by the consumer. Find the new equilibrium price and quantity. Is there any deadweight loss?
- d. In an effort to improve New York’s bad reputation, the city council replaces the tax with a law requiring consumers to give their barber a \$6 tip after a haircut. New York residents grumble and complain (we like to complain), but they obey the new law. Find the new equilibrium price and quantity. Is there any deadweight loss? (Hint: Will the demand curve shift? What about the supply curve?)

2 Tooling up

A soybean farmer can sell as many units of soybeans as she wants at a price $p = 20$. With her current farm equipment, her cost of producing q units of soybeans is $C(q) = 2q^2 + 4q$. She is deciding whether to buy a new tractor, which would lower her production costs to $C(q) = q^2 + 2q$. How much would the farmer be willing to pay for the tractor?