Quiz #3

answers

Problem 1 Adewale has a utility function over apples (A) and bananas (B) given by $u(A,B) = \frac{1}{2}\ln(A) + \frac{1}{2}\ln(B)$, so that his marginal utilities are $MU_A = \frac{1}{2A}$ and $MU_B = \frac{1}{2B}$. He allocates $\$I$ to these two goods.

a. Derive Adewale's demand curve for apples.

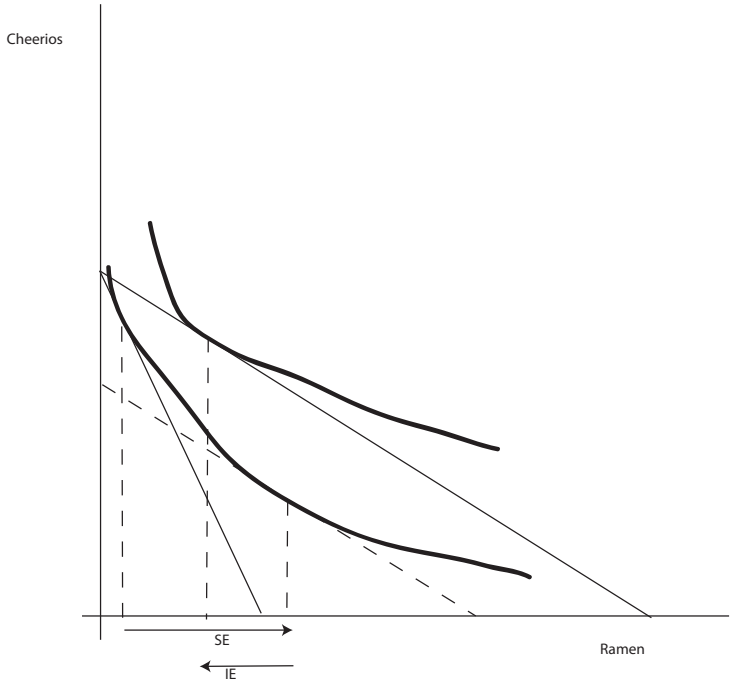
Demand for apples is given by $\frac{I}{2p_A}$.

b. How does Adewale's demand for apples depend on the price of bananas? For Adewale, are apples and bananas complements, substitutes, or neither? It doesn't. Apples and bananas are neither complements nor substitutes.

Problem 2 If the demand curve for books is $p = 60 - Q$, and the supply curve is $p = Q$, what are the welfare effects of a tax on buyers of \$2? Make sure to give consumer and producer surplus before and after the tax, as well as the deadweight loss and government revenue resulting from the tax. Before the tax, $CS = PS = 450$. After the tax, $CS = PS = 420.5$, government revenue is \$58. DWL is \$1.

Problem 3 Pisa spends \$200 on either ramen noodles or Cheerios. Suppose ramen costs \$1/package, while Cheerios cost \$4/box.

a. Suppose the price of ramen increases from \$1 to \$2. For Pisa, ramen noodles are an inferior good, but not a Giffen good. Draw a graph with Pisa's budget line both before and after the price increase, and a set of indifference curves consistent with Pisa's preferences. Make sure to clearly label both the income and substitution effect of the price shift.



b. True/false/uncertain: Given that ramen is an inferior good for Pisa, it must be that Cheerios are a normal good. Support your answer with a graph and/or short explanation. True. If an increase in income decreases consumption of ramen, yet Pisa is still on his budget line, he must be consuming more Cheerios.

Problem 4 Orlando has monotonic preferences over pizza and beer; he dislikes all other food and beverages. He has $2,100 to spend each month on pizza and beer. When the price of a beer is $5, and the price of a pizza is $10, Orlando maximizes her utility by purchasing 120 beers and 150 pizzas.

Suppose the price of beer increases to $6 while, at the same time, the price of pizza decreases to $9. Does this change make Orlando better or worse off, or is there not enough information to tell?

Use indifference curve/ budget set analysis and/or a detailed explanation to support your answer. Orlando is better off, as he can still afford his best affordable bundle before the change in prices, with $30 to spare. He can use this extra money to buy even more pizza and beer, making him better off than he was before.