

ECON 6500 Summer 2008
Assignment 2: Utility Theory

1. The Following are TRUE or FALSE statements. In each case, use Budget Constraint-Indifference Curve analysis to determine whether they are true or false. (*marks only for explanation*)
 - (a) If a decline in the price of tomatoes results in a reduction in consumption of tomatoes *by tomato farmers*, then we can conclude that tomatoes are inferior goods to the tomato farmers
 - (b) If the price of x falls and the consumption of x remains at the same level as before the price fall, then x is neither a normal good or an inferior good.
 - (c) Skippy consumes only two goods, X and Y , with a fixed budget. If the cross price elasticity of demand for Y with respect to the price of X is zero, Then the own price elasticity of demand for X is -1 .
 - (d) In a two good world a consumer initially faces the prices $P_x = P_y = 1$ and he is buying 10 units of each. Suppose the P_x rises to \$3 and P_y rises to \$2 while the consumer's income rises by \$30. The quantity of x consumed may fall.

2. Mary has an income of \$10 per week, which she spends on Marmite which costs \$4 a jar, and bread, which costs \$2 per loaf.
 - (a) Draw Mary's budget line? What is the slope of her budget line?
 - (b) Show the effect on the budget line of halving the price of Marmite to \$2 per jar.
 - (c) Show that a 50 per cent reduction in the price of both Marmite and bread (to \$2 a jar and \$1 per loaf) has the same effect on Mary's budget line as a doubling of Mary's income to \$20 per week.
 - (d) Suppose the government, due to a national shortage of brewers yeast (the main ingredient in Marmite) decides to ration Marmite consumption to one jar per week. Show the effect of the rationing on the original (part a) budget constraint.

3. Myrtle has \$200 per month to spend on Transit (X) and all other goods (Y). She currently buys a bus pass for \$50 and rides 40 times per month. If she didn't buy the pass, bus rides would cost \$2/ride. Myrtle is offered to join a Transit program that would allow her to pay a membership fee and then could ride the bus for \$1 per trip. The most Myrtle would pay for the membership is \$20. and then she would ride 15 times a month. If she were given the membership for free, she would ride the bus 18 times per month. Myrtle also reveals that she would be indifferent between a free membership (and \$1 per ride) versus simply having the traditional bus pass reduced to \$25 per month (flat rate), where she would again choose to ride the bus 40 times a month.
 - (a) Using all the information provided, draw all the relevant budget constraints and indifference curves. Be sure to label all equilibrium points and have a legend that explains each point (in one or two sentences).
 - (b) Calculate her CV (compensating variation)
 - (c) Calculate her EV (equivalent variation)

4. Skippy has the following utility function: $u = xy$ and faces the budget constraint: $M = p_x x + p_y y$. Her associated marginal rate of substitution is $MRS = \frac{y}{x}$
 - (a) Use the $MRS = p_x/p_y$ and the budget constraint to find Skippy's demand functions.
 - (b) Suppose $M = 120$, $P_y = 1$ and $P_x = 4$. What is Skippy's optimal x , y and utility number? If the price of x was lowered to 2 what would be her x , y and utility number
 - (c) What is the most Skippy would pay to have P_x lowered to 2?
 - (d) Suppose $M = 120$, $P_y = 1$ and $P_x = 4$. How much additional income would Skippy need to be as well off as if the price of x had fallen to 2?