

Econ 3101, sec 004
Spring 2008

Homework 1

due 02/29/2008

We are given a utility function:

$$u(x, y) = \ln(2x) + 2 \ln y$$

1. Find the equations for 2 indifference curves: for $U = \ln 8$, $U = \ln 32$. Draw them.
2. Find MRS, check if U is of diminishing MRS.
3. Derive the uncompensated demand functions. Is any of the goods a Giffen good? Are both goods normal? Are they gross substitutes?
4. Derive the indirect utility function.
5. Suppose $\bar{p}_y = 1$, $\bar{I} = 12$, compute the demand for good x i.e. $q_x(p_x) = x(p_x, \bar{p}_y, \bar{I})$. Draw the demand curve.
6. Derive the compensated demand. Are the goods net substitutes?
7. Derive the expenditure function.
8. Suppose $\bar{p}_y = 1$, $\bar{U} = \ln 64$, compute the compensated demand for good x i.e. $q_x^c(p_x) = x^c(p_x, \bar{p}_y, \bar{U})$, draw the compensated demand curve. How does it compare to the uncompensated demand curve? Why?
9. Consider the price change from $p_x = 1, p_y = 1, I = 12$, to $p'_x = 2, p'_y = 1, I' = 12$. Compute the substitution and income effects. Explain them on a schematic picture.