Marshallian Demand

LLE – Mathematics and Statistics Skills

1. Agent A's preferences over goods x and y can be represented by the utility function $U(x, y) = x^{0.4}y^{0.6}$. Suppose A's income is $\pounds 300$, the price of good x is $\pounds 10$, and the price of good y is $\pounds 15$. Use the Lagrangian method to find A's Marshallian demand for x and y (i.e., calculate the specific quantities consumed).

2. Consumer B's preferences over goods x and y can be represented by the utility function $U(x, y) = x^{0.25}y^{0.75}$. Suppose B's income is $\pounds 240$, the price of good x is $\pounds 8$, and the price of good y is $\pounds 4$. Use the Lagrangian method to find B's Marshallian demand for x and y (i.e., calculate the specific quantities consumed).

3. Agent C's preferences over goods x and y can be represented by the utility function $U(x, y) = x^{0.9}y^{0.1}$. Let M denote C's income, and p_x and p_y denote the prices of the respective goods. Use the Lagrangian method to find C's Marshallian demand function for y.

4. Consumer D's preferences over goods x and y can be represented by the utility function $U(x, y) = x^a y^b$, where a and b are positive constants. Let M denote D's income, and p_x and p_y denote the prices of the respective goods. Use the Lagrangian method to find D's Marshallian demand function for x.

5. Agent E's preferences over goods x and y can be represented by the utility function $U(x, y) = x + \ln(y)$. Let M denote E's income, and p_x and p_y denote the prices of the respective goods. Use the Lagrangian method to find E's Marshallian demand functions for x

and y. Assume the consumer consumes positive amounts of both x and y.

6. Consumer F's preferences over goods x and y can be represented by the utility function $U(x, y) = xy + x$. Let M denote F's income, and p_x and p_y denote the prices of the respective goods. Use the Lagrangian method to find F's Marshallian demand functions for x and y. Assume the consumer consumes positive amounts of both x and y.