THE UNIVERSITY OF ZAMBIA
DEPARTMENT OF ECONOMICS
ECN 2115: I MICROECONOMIC THEORY
TUTORIAL SHEET 1-2022
Answer the questions below, and verify the answers during tutorials.

1. Given a utility function U(X,Y)=X*Y with a given budget constraint : M= $P_x X+P_y Y$
   a. Using the Lagrange method, derive the demand function of X and Y.
   b. What happens to the demands for X and Y if M, Px and P_y increase by 10%
   c. Calculate the Income Elasticity of Demand for Good X and comment on the results.
2. Consider the utility function $U(X,Y)=3x^2+5y$ with $MU_x = 6x$ and $MU_y = 5$.
   a. Is the assumption that "more is better" satisfied for both goods?
   b. What is the $MRS_{x,y}$ for this utility function?
   c. Is the $MRS_{x,y}$ diminishing, constant, or increasing as the consumer substitutes *x* for *y* along an indifference curve

3. Suppose the market demand curve for a product is given by $Q^d=1000-10P$ and the market supply curve is given by 50 25 $Q^s= -50P+25P$
   a. What are the equilibrium price and quantity?
   b. What is the Inverse Form of the demand curve?
   c. At the market equilibrium, what is the price elasticity of demand?
   d. Suppose the price in this market is $25. What is the amount of excess demand?

4. Find the optimum commodity Purchase for a consumer whose utility function and budget constraint are $U=Q_1^{1.5}Q_2$ and $3Q_1 + 4Q_2=100$

5. Show that the two utility functions given below generate an identical demand functions for goods X and Y.

   a. U(X,Y)log(X) +log (Y)
   b. $U(X,Y)= (XY)^{0.5}$

7. Given the following utility functions:

   a. U(X,Y)=min(x,4y) and the budget constraint : M= $P_x X+P_y Y$, find the demand function for X and Y that would maximize utility.

   b. U(X,Y)=min(2X,Y) and M=12, P_x=1 P_y=1, what is the optimal bundle of X and Y?

8. A firm faces the production function $Q = 12K^{0.4} L^{0.6}$ and can buy the inputs K and L at prices per unit of K20 and K5 respectively. If it has a budget of K800 what combination of K and L should it use in order to produce the maximum possible output?