TUTORIAL 4

ELASTICITY

1. The demand curve of a company is given by P=2000-50Q. What is the price elasticity of the demand curve if the price is Rs500? At what price, if any, the product has unitary elastic demand? What can be inferred from this? **(-1/3, P = 1,000)**

2. New corps demand function for satellite internet services is given as follows:
$$Q_{Sat}(\text{in thousands}) = 152.5 - 0.9P_{Sat} + 1.05\,P_{DSL} + 1.10\,P_{Cable}$$
Where, P_{Sat} is the price of the satellite internet services, P_{DSL} is the price of DSL internet services, and P_{Cable} is the prices of the high speed cable internet service. Suppose the prices of the DSL and Cable is $30 each. Furthermore, News corp has identified that its monthly revenue need to be at least $12 million to cover its monthly cost. If P_{Sat} is $50, would its revenue be sufficiently high to cover its costs? Is it possible for the News corps to cover its cost given the current demand function keeping P_{DSL} and P_{Cable} constant? Justify **(No, revenue is less than $12 million, Yes, it is possible)**

3. YOY Boats Ltd produces a popular brand toy called Yellow Meanies. Consider the demand and supply equations for Yellow Meanies :
$Q_d = 150 - 2P_X + 0.001I + 1.5\,P_Y$ and $Q_s = 60 + 4P_X - 2.5\,W$ where:
Q_d=Demand for Yellow Meanies
P_X=Price per unit of Yellow Meanies
I=Median annual per family income=$25,000
P_Y=Price per unit of Apple Bonkers=$5
W=Hourly per worker wage rate=$8.60

a) What type of good is Apple Bonker? **(Substitute)**
b) What are the equilibrium price and quantity of Yellow Meanies? **(P=24, Q = 134.5)**
c) When the price of Yellow Meanies fall by $5, calculate its effect on total expenditure of families. **(expenditure falls by 482.5)**

4. A Steel plant is capable of producing x tones per day of a low grade steel and y tones per day of a high grade steel where y= (40-5x)/(10-x). The market price of low grade steel is half that of high grade steel. Calculate the tones of low grade steel required to maximize total revenue for the whole plant. **(x=5.5)**

5. The demand function of a commodity A is given by the equation $Q_A = 50 - P_A$, which intersects another linear demand curve of commodity B as Q_B at P=10. The elasticity of demand Q_B is six times larger than that of Q_A at that point.
a) Calculate the elasticity of commodity B   **(E_B = -3/2)**
b) If the price is kept at Rs 8, what would be the demand of $Q_{B?}$ **(Q_B = 52)**