**1.** Assume that the cost function of a firm is given by the relationship:



And assume that the demand for the output of the firm is a function of price P:



1. Total revenue is TR=P\*Q. Please derive TR as a function of Q.
2. Profit = TR – TC. Please drive Profit as a function of Q

**2.**  Decker is a maker of small kitchen appliances. Its economists estimated the following demand for toaster oven using data gathered over 16 quarters from 10 major retail distributors of its product. This type of sample which involves the use of cross-sectional and time series data is referred to as a pooled sample. On the basis of this pooled sample of 160 observations, the economist estimated the following linear equation:

Q = 40 − 1.1 P + 1.5 A + 0.32 I + 0.5 H + 0.1 Pc, R2 = 0.91

The variables and their forecasted values are:

Q=Quantity demanded (in thousands);

P=Average price=55;

A=Advertising expenditures (in thousands)=20;

I=Average household income (in thousands Euro)=31;

H=Total number of residential (house) sales (in thousands)=10;

Pc=Price of a leading competitor (in Euro) =50

1. Please explain the signs of P, A, I, H, Pc.
2. R2=0.91. What does that mean?