Tutorial 8

1. Dent Carr is in the auto repair business, with a total cost function of $TC(s)=2s^2+10$ where s is the number of cars which are repaired.
   (a) Give the total variable cost, total fixed cost, average variable cost, average fixed cost, average total cost and marginal cost.
   (b) Find the minimum points of the average cost and average total cost functions.
   (c) Show these on a diagram (you can show the total fixed, total variable and total cost curves on a separate diagram)

2. Peter's Publishing House is a business which proof reads, edits, prints and binds dissertations. The fixed cost is £16,000 for an office and necessary equipment. Each dissertation involves costs of $£4000\delta^2$ where δ is the number of dissertations Peter deals with.
   (a) Write down the fixed cost, variable cost and total cost functions and show them on a diagram.
   (b) Write down the average variable cost and average total cost functions.
   (c) Calculate the level of output (dissertations) which yields the minimum average total cost and minimum average variable cost.
   (d) Write down the marginal cost function and discuss how it relates to the AVC and ATC functions. At what level of output does AVC=MC and ATC=MC?

3. Consider a business operating in a competitive market with a total cost function of $c(y)=y^2+10$.
   (a) Write down the marginal cost and average cost functions.
   (b) Explain and find the point at which MC=AC.
   (c) What is the lowest price at which he will supply a positive quantity in long run equilibrium? How much would he supply at that price?
   (d) Show the firm's supply function on a diagram.

4. Manner Refinery coverts crude oil into gasoline. It takes one barrel of crude oil to produce one barrel of gasoline. In addition to the cost of crude oil, there are some other costs involved in refining gasoline. Total cost of producing y barrels of gasoline are described by the cost function $c(y)=y^2/2+ty$, where t is the price of a barrel of crude oil.
   (a) Express the marginal cost and average cost of producing gasoline as functions of t and y.
   (b) Suppose the cost of crude oil is £5 a barrel, what is the marginal cost curve?
   (c) Show Manner Refinery's supply curve on a diagram

5. For general discussion. Can you think of firms which are running on losses continuously? Why would a firm continue to run on losses?