**Assignment 17 (February 6 – 11)**

1. A production function is given by , where Q is output, K is capital and L is labour.

Given that the current levels of K and L are 9 and 4 respectively

a) Determine the value of the Marginal Rate of Technical Substitution, i. e. -  where Q is kept constant.

b) Estimate the increase in labour needed to maintain the current level of output given a decrease in capital of half a unit.

c) Sketch the isoquant of the above function for Q = 74.

2. Solve the following differential equation:



3. Minimize  subject to constraints , 

4. The supply function for a commodity takes the form

**** for some constant a, b, c, where P denotes the price of the commodity supplied. When P = 1, the quantity supplied is 3; when P = 2, the quantity supplied is 11; when P = 3, the quantity supplied is 25. **Using matrices,** find the constants a, b, c, and find the quantity supplied when the market price is 4.

5. Plot the phase line for each of the following equation and interpret dynamic behavior of the solution:

   