Lab 4

1. Write an m file to determine the sum of the infinite series $\sum_{n=1}^{\infty}\frac{1}{n^2}$ converges to $\pi^2/6$. Do this by computing the sum for a) n=100, b) n=1000 and c) n=10000. Do this by assigning n values using logspace command.

2. Write an m-file to evaluate the following algebraic formula

$$p(t)=\begin{cases} log(t^2-a) & if \quad t^2 > a \\ log(t^2) & if \quad t^2 \le a \end{cases}$$

where t is a number that a user enters and a = 100.

3. A problem in timber growth management is to determine how much of an area to leave uncut so that the harvested area is reforested in a certain period of time. It is assumed that reforestation takes place at a known rate per year, depending on climate and soil conditions. A reforestation equation expresses this growth as a function of the amount of timber standing and the reforestation rate. For example, if 100 acres are left standing and the reforestation rate is 0.05, then 100(1+0.05) are forested at the end of the first year. At the end of the second year, the number of acres forested is 105(1+0.05) = 110.25 acres. Assume that there are 14,000 acres total with 2500 acres uncut and that the reforestation rate is 0.02. Write a program to calculate and print a table showing the number of acres forested at the end of each year, for up to 20 years.