Lab 2

1. Write a C++ progam that defines an **int** type variable with the value $2^{31} - 1$ and a second **int** type variable with the value 2^{31}. Get the program to output the value of both these variables.

2. Before you run the following program analyse it and determine what the output would be if the computer arithmetic were precise. Run the program. Change the type of the variables **x** and **y** to **double** and run the program again. Comment out the line **cout.precision(20)** and run the program again.

```
#include <iostream>
#include<cmath>
using namespace std;

void main()
{
    cout.precision(20);
    float x,y;
    for(int i=0;i<=20;i++)
    {
        x=1/pow(10.0,i);
        y=x*pow(10.0,i);
        if(y!=1)
        {
            cout<<y<<"\t"<<i<<endl;
        }
    }
}
```

3. Create an Excel spreadsheet which demonstrates that the value which is displayed in a cell is not necessarily the value that is stored by Excel.

4. Get Excel to sketch a graph of the function $y = x^2, x \in [-4, 4]$.

5. Use Excel to estimate the roots of the equation $x^3 - 3x^2 + 1 = 0$.