

Mh4718 Worksheet 6

1. When the following code is executed what value will be displayed :

```
float x=0;
cout.precision(20);
for(int i=-1;i>=-25;i--)
{
    x+=pow(2.0,i);
}
cout<<x<<endl;
```

Explain.

2. What is the exact value of what is stored when a float type variable is assigned the value 0.7? Write a C++ program which will confirm that your calculation is correct.
What is the error in the stored value? How many decimal places and how many significant digits are there in the base ten representation of the error?
3. What will be the accumulated error in the value of the variable x after the following code is executed?

```
float x=0.2;
for(int i=1;i<=20;i++)
{
    x*=2;
}
```

4. Write a C++ program which calculates a Riemann sum which estimates $\int_0^3 x^2 dx$.
Bring the program you write to the next computer lab session either on a USB key or via email.
5. Determine how many operations will be required to evaluate the polynomial

$$p(x) = 3x^5 - 2x^4 + 5x^3 + 2x^2 - x + 8$$

for a given value of x

- (a) using the “direct ” method of multiplying out each term as it is written
- (b) using Horner’s method.

Determine $p(2)$ by hand using Horner’s method.