**Lab 3: Analysis of Recursive Algorithms**

**Algorithm**: Secret(x)

// Input: x is a non-negative integer

// Output: ?

**if** x = 1:

return 1

**else**

**return** Secret(x - 1) + x\*x\*x

**Step 1:** What is the output of this algorithm? What does it compute? (10p)

**Step2:** Set up a recurrence relation for the number of multiplications made by the algorithm and solve it (25p).

**Step3:** Draw a tree of recursive calls for this algorithm and count the number of calls made by the algorithm (25p).

**Step4:** Is it a good algorithm for solving this problem? Why? Explain it (20p).

**Step5:** Design a non-recursive algorithm? Write the pseudo-code of this algorithm and the time efficiency class that this algorithm belongs to (use Non-recursive analysis)? (20p).