

Student's name:

Information Technology: Short exam 04.12.2014  
Group A

### Question 1

Write Octave function to calculate  $f(x, a, b, N)$  where:

$$f(x, a, b, N) = a \sum_{i=1}^N (x/i + b)^i$$

Write a script to show usage of this function.

### Question 2

Write a function to calculate average segment length of a polyline. The function takes on input coordinates  $x_i, y_i, i = 1, \dots, N$  of the polyline vertices.

### Question 3

The sequence is given by the recursive formula:

$$\begin{aligned} a_1 &= \frac{1}{4} \\ a_2 &= 2 \\ a_k &= a_{k-1}^2 + a_{k-2} \quad \text{for } k \geq 3 \end{aligned}$$

Write a program to show N initial elements of this sequence.

### Question 4

Give the sequence as in Question 3 write a program to find value of N that satisfies the following condition:

$$\sum_{i=1}^N a_i < 1000$$