Tasks for 11/02/2019:

Polynomial interpolation 2: Given the data table:

x	1	1.1	1.2	1.3	1.4
f(x)	0.54030	0. 48360	0. 30236	0. 22150	0.18497

Calculate the value of

a) f(1.03)

b) f(1.38)

by applying Newton's forward difference approach and considering the full 4^{th} order polynomial. Verify if the values are matching with the one obtained from Lagrange's method discussed in the previous class.

Polynomial interpolation 3: Given the data table:

x	1	2	3	4	5	6	7	8	9	10
f(x)	1	.4444	.2632	.1818	.1373	.1096	.0929	.0775	.0675	.0597

a) Use Newton-Gregory forward difference formula to interpolate a polynomial through these points.

b) Check if a 9^{th} order polynomial is any better than a 5^{th} order polynomial by plotting the polynomial alongside data points.

c) Based on this plot write a discussion that if you need to estimate i) f(2.22) ii) f(5.7) and iii) f(8.11), will you be using the 5^{th} order polynomial?