Соколовського Євгенія 26 варіант 8 група

import numpy as np

from math import factorial

import matplotlib.pyplot as plt

x=[0.115,0.120,0.125,0.130,0.135,0.140,0.145,0.150,0.155,0.160,0.165]

y=[8.6572,8.2932,7.9582,7.6489,7.3623,7.0961,6.8491,6.6185,6.3998,6.1965,6.0055]

h = x[1] - x[0]

x1=1.422

x2=1.451

q=(x1 - x[0])/h

q1 = (x2-x[-1])/h

def n(y,j):

mas=[]

for i in range(len(y)):

mas.append(y[i] - y[i-1])

mas.pop(0)

if j == 1:

return mas

else:

j-=1

return n(mas, j)

s\_1 = y[0]+q\*n(y,1)[0]+q\*(q-1)\*n(y,2)[0]/factorial(2)

s\_2 = q\*(q-1)\*(q-2)\*n(y,3)[0]/factorial(3)

s\_3 = q\*(q-1)\*(q-2)\*(q-3)\*n(y,4)[0]/factorial(4)

s\_4 = q\*(q-1)\*(q-2)\*(q-3)\*(q-4)\*n(y,5)[0]/factorial(5)

n\_1 = s\_1 + s\_2 + s\_3 + s\_4

t1 = y[5] + q1\*n(y,1)[4]+q1\*(q1+1)\*n(y,2)[3]/factorial(2)

t2 = q1\*(q1+1)\*(q1+2)\*n(y,3)[2]/factorial(3)

t3 = q1\*(q1+1)\*(q1+2)\*(q1+3)\*n(y,4)[1]/factorial(4)

t4 = q1\*(q1+1)\*(q1+2)\*(q1+3)\*(q1+4)\*n(y,4)[1]/factorial(5)

n\_2 = t1+t2+t3+t4

print ('The value of a function at a point x1=', x1, 'using Newton\*s First Interpolation Formula', round(n\_1,5))

print ('The value of a function at a point x2=', x2, 'using Newton\*s Second Interpolation Formula', round(n\_2,5))

x\_1=np.linspace(np.min(x), np.max(x))

y\_1=np.linspace(np.min(y), np.max(y))

plt.plot(x,y, 'ro', x, y)

plt.title('Graph of the interpolation function')

plt.xlabel('x')

plt.ylabel('y')

plt.grid()

plt.show()

Изображение выглядит как текст

Автоматически созданное описание



