

```

1  from numpy import zeros, array, linspace
2  from math import factorial
3  from matplotlib.pyplot import plot, axes, xlim, ylim
4
5  def Interpolation(x,u,a) :
6      N = len(x)-1; U = zeros((N+1,N+1))
7      for n in range(N+1) :
8          U[n,0] = u[n]
9      for k in range(1,N+1) :
10         for n in range(N+1-k) :
11             U[n,k] = k*(U[n,k-1] - U[n+1,k-1])/(x[n] - x[n+k])
12         sum = 0.
13         for n in range(N+1) :
14             mult = 1.
15             for k in range(n) :
16                 mult = mult*(a - x[k])
17             sum = sum + U[0,n]/factorial(n)*mult
18         return(sum)
19
20 x = array([2, 4, 2, 4])
21 u = array([2, 4, 4, 2])
22
23 t = array([2, 4, 3, 1])
24
25 plot(x,u,'go',markersize = 7.)
26
27 t_interp = linspace(0,5,100)
28 u_interp = Interpolation(t,u,t_interp)
29 x_interp = Interpolation(t,x,t_interp)
30
31 plot(x_interp,u_interp,'-r')
32 xlim((0,10)); ylim((0,6)); axes().set_aspect(1)
33
34 # Листинг программы, реализующей
35 # параметрическую интерполяцию кривой

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