clc,clear

%建立符号变量a(发展系数)和b(灰作用量)

syms a b;

c = [a b]';

%原始数列 A

%A = [143,169,175,180];

A = [4.7,4.9,5.3,5.3];

n = length(A);

%对原始数列 A 做累加得到数列 B

B = cumsum(A);

%对数列 B 做紧邻均值生成

for i = 2:n

C(i) = (B(i) + B(i - 1))/2;

end

C(1) = [];

%构造数据矩阵

B = [-C;ones(1,n-1)]

Y = A; Y(1) = []; Y = Y';

%使用最小二乘法计算参数 a(发展系数)和b(灰作用量)

c = inv(B\*B')\*B\*Y;

c = c';

a = c(1); b = c(2);

%预测后续数据

F = []; F(1) = A(1);

for i = 2:(n+11)

F(i) = (A(1)-b/a)/exp(a\*(i-1))+ b/a;

end

%对数列 F 累减还原,得到预测出的数据

G = []; G(1) = A(1);

for i = 2:(n+11)

G(i) = F(i) - F(i-1); %得到预测出来的数据

end

disp('预测数据为：');

disp(G);