```
clc;
clear all;
close all;
t = [0 2 4 5 6 10 12 14 16 18 20 22 24];
y = [71.1 69.1 66 69.1 73 79 86 93 96.1 93.9 91 82.9 82];
figure,
plot(t,y,'ro')
title('Part a: Three constate curve fitting')
F = @(c,tdata) c(1) + c(2)*cos(pi*tdata/12) + c(3)*cos(pi*tdata/12) ;
c0 = [70 0 0 ];
[c,resnorm,~,ecitflag,output] = lsqcurvefit(F,c0,t,y)
hold on
plot(t,F(c,t));


f = F(c,t);
rmse = sqrt(mean((y(:) - f(:)).^2));
str = {'Root Mean Square','for part a is',rmse};
text(2,95,str);
hold off


t = [0 2 4 5 6 10 12 14 16 18 20 22 24];
y = [71.1 69.1 66 69.1 73 79 86 93 96.1 93.9 91 82.9 82];

figure,
plot(t,y,'ro')
title('Part b :Four constate curve fitting')
F = @(c,tdata) c(1) + c(2)*cos(pi*tdata/12) + c(3)*cos(pi*tdata/12) +c(3)*cos(pi*tdata/6) ;
c0 = [70 0 0 0];
[c,resnorm,~,ecitflag,output] = lsqcurvefit(F,c0,t,y)
hold on
plot(t,F(c,t));
f = F(c,t);
rmse = sqrt(mean((y(:) - f(:)).^2));
str = {'Root Mean Square','for part a is',rmse};
text(2,95,str);
```

Local minimum possible.

lsqcurvefit stopped because the final change in the sum of squares relative to
its initial value is less than the value of the function tolerance.

c =

   81.8476   -17.6364   10.9121

resnorm =

   1.0447e+03

ecitflag =

     3

output =

  struct with fields:

    firstorderopt: 0.0075
       iterations: 5
        funcCount: 24
      cgiterations: 0
        algorithm: 'trust-region-reflective'
         stepsize: 160.0000
          message: '↵Local minimum possible.↵↵lsqcurvefit stopped because the final change in the sum of squares relative to ↵its initial value is less than the val⁝

Local minimum possible.

lsqcurvefit stopped because the final change in the sum of squares relative to
its initial value is less than the value of the function tolerance.

c =

   81.8512   -6.6465   -0.0734   0

resnorm =

   1.0447e+03

ecitflag =

```
output =

  struct with fields:

    firstorderopt: 3.2697e-06
       iterations: 3
        funcCount: 20
     cgiterations: 0
        algorithm: 'trust-region-reflective'
         stepsize: 3.3646e-05
          message: '↵Local minimum possible.↵↵lsqcurvefit stopped because the final change in the sum of squares relative to ↵its initial value is less than the val
```

Part a: Three constate curve fitting

Root Mean Square
for part a is
8.96443

Part b :Four constate curve fitting

Root Mean Square
for part a is
8.96426