```
x0 = 27.5;
x1 = 35.5;
x2 = 43.5;
y0 = 6.430;
y1 = 6.490;
y2 = 6.371;

A = [x0^3 x0^2 x0 1 0 0 0 0;
    x1^3 x1^2 x1 1 0 0 0 0;
    0 0 0 0 x1^3 x1^2 x1 1;
    0 0 0 0 x2^3 x2^2 x2 1;
    3*x1^2 2*x1 1 0 -3*x1^2 -2*x1 -1 0;
    6*x1 2 0 0 -6*x1 -2 0 0;
    6*x2 2 0 0 0 0 0 0;
    0 0 0 0 6*x2 2 0 0]
B = [y0;y1;y1;y2;0;0;0;0]

Ainv = inv(A);

C = Ainv*B
a1=C(1);b1=C(2);c1=C(3);d1=C(4);a2=C(5);b2=C(6);c2=C(7);d2=C(8);

s1 = @(x) a1*x^3 + b1*x^2 + c1*x +d1;
s2 = @(x) a2*x^3 + b2*x^2 + c2*x +d2;

fplot(s1,[x0 x1],'b');
hold on
fplot(s2,[x1 x2],'b');

f2 = @(x) (x-x1)/(x0-x1)*(x-x2)/(x0-x2)*y0 + (x-x0)/(x1-x0)*(x-x2)/(x1-x2)*y1 + (x-x0)/(x2-x0)*(x-x1)/(x2-x1)*y2;
fplot(f2,[x0 x2],'r');

x3 = 19.5;
y3 = 6.742;
f3 = @(x) (x-x0)/(x3-x0)*(x-x1)/(x3-x1)*(x-x2)/(x3-x2)*y3 + (x-x3)/(x0-x3)*(x-x1)/(x0-x1)*(x-x2)/(x0-x2)*y0 + (x-x3)/(x1-x3)*(x-x0)/(x1-x0)*(x-x2)/(x1-x2)*y1 + (x-x
fplot(f3,[x0 x2],'k')

CubicSpline = s1(34)
Legrange2 = f2(34)
Legrange3 = f3(34)
```

```
A =

   1.0e+04 *

  Columns 1 through 7

    2.0797    0.0756    0.0027    0.0001         0         0         0
    4.4739    0.1260    0.0036    0.0001         0         0         0
         0         0         0         0    4.4739    0.1260    0.0036
         0         0         0         0    8.2313    0.1892    0.0043
    0.3781    0.0071    0.0001         0   -0.3781   -0.0071   -0.0001
    0.0213    0.0002         0         0   -0.0213   -0.0002         0
    0.0261    0.0002         0         0         0         0         0
         0         0         0         0    0.0261    0.0002         0

  Column 8

         0
         0
    0.0001
    0.0001
         0
         0
         0
         0


B =

    6.4300
    6.4900
    6.4900
    6.3710
         0
         0
         0
         0


C =

    0.0001
   -0.0076
```

```
    0.3122
    2.3841
    0.0001
   -0.0076
    0.3122
    2.3841

Warning: Function behaves unexpectedly on array inputs. To improve performance,
properly vectorize your function to return an output with the same size and
shape as the input arguments.
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properly vectorize your function to return an output with the same size and
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shape as the input arguments.
Warning: Function behaves unexpectedly on array inputs. To improve performance,
properly vectorize your function to return an output with the same size and
shape as the input arguments.

CubicSpline =

    6.4978


Legrange2 =

    6.4924


Legrange3 =

    6.4758
```

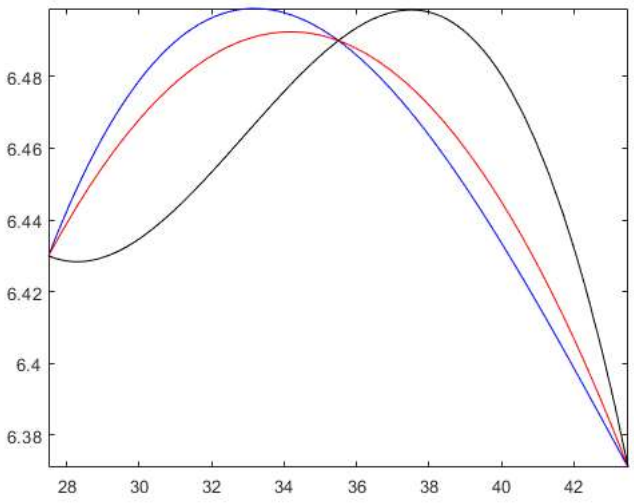

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