```
peak3 = {19.4, 123.6, 30.2, 315.8, 41.6, 513.9, 53.3, 680.7, 65.5, 810.1, 78, 921, 9};
trough3 = {24.7, 60.8, 35.6, 53.0, 46.9, 43.2, 58.7, 90.2, 70.9, 198.1, 83.6, 380.5};
peak2 = {20.5, 451.6, 29.8, 1091.6, 41.0, 1576.3, 52.5, 1929.9, 64.6, 2193.8, 77.1, 2443.2};
trough2 = {23.6, 305.2, 34.7, 308.3, 45.8, 326.6, 57.5, 504.6, 69.7, 858.2, 82.3, 1351.9};
peak1 = {19.2, 253.0, 29.7, 570.8, 41.0, 802.3, 52.5, 961.2, 64.6, 1073.0, 77.1, 1167.1};
trough1 = {24.0, 151.0, 34.9, 147.1, 46.1, 153, 57.9, 235.4, 69.9, 394.3, 82.5, 619.8};
t = {peak1, peak2, peak3, trough1, trough2, trough3};
t = Table[Partition[t[[k]], 2], {k, 1, 6}];

trough1 = t[[4]] // TableForm
```

```
24.   151.
34.9 147.1
46.1 153
57.9 235.4
69.9 394.3
82.5 619.8
```

```
U = trough1[[All, 1]]
```

```
{24., 34.9, 46.1, 57.9, 69.9, 82.5}
```

$$\overline{U0} = \frac{82.5 - 24}{5} = 11.7$$

```
U0i = Table[U[[i + 1]] - U[[i]], {i, 1, 5}]
```

```
{10.9, 11.2, 11.8, 12., 12.6}
```

$$u = \sqrt{\frac{\text{Total}\left[(U0i - 11.7)^2\right]}{5 * 4}} = 0.3$$

$$U0 \quad = \left|\frac{\overline{U0} - 11.55}{11.55}\right| \times 100\% = 1.2987\%$$

```
Grid[{Append[Reverse[U], "        Ui/v"] // Reverse,
   Append[Reverse[U0i], "        U0i/v"] // Reverse}, Frame → All]
```

Ui/v	24.	34.9	46.1	57.9	69.9	82.5
U0i/v	10.9	11.2	11.8	12.	12.6	

```
Flatten[Table[{t[[k]], t[[3 + k]]}, {k, 1, 3}], 1] // MatrixForm
```

$$\begin{pmatrix}
\begin{pmatrix} 19.2 \\ 253. \end{pmatrix} & \begin{pmatrix} 29.7 \\ 570.8 \end{pmatrix} & \begin{pmatrix} 41. \\ 802.3 \end{pmatrix} & \begin{pmatrix} 52.5 \\ 961.2 \end{pmatrix} & \begin{pmatrix} 64.6 \\ 1073. \end{pmatrix} & \begin{pmatrix} 77.1 \\ 1167.1 \end{pmatrix} \\
\begin{pmatrix} 24. \\ 151. \end{pmatrix} & \begin{pmatrix} 34.9 \\ 147.1 \end{pmatrix} & \begin{pmatrix} 46.1 \\ 153 \end{pmatrix} & \begin{pmatrix} 57.9 \\ 235.4 \end{pmatrix} & \begin{pmatrix} 69.9 \\ 394.3 \end{pmatrix} & \begin{pmatrix} 82.5 \\ 619.8 \end{pmatrix} \\
\begin{pmatrix} 20.5 \\ 451.6 \end{pmatrix} & \begin{pmatrix} 29.8 \\ 1091.6 \end{pmatrix} & \begin{pmatrix} 41. \\ 1576.3 \end{pmatrix} & \begin{pmatrix} 52.5 \\ 1929.9 \end{pmatrix} & \begin{pmatrix} 64.6 \\ 2193.8 \end{pmatrix} & \begin{pmatrix} 77.1 \\ 2443.2 \end{pmatrix} \\
\begin{pmatrix} 23.6 \\ 305.2 \end{pmatrix} & \begin{pmatrix} 34.7 \\ 308.3 \end{pmatrix} & \begin{pmatrix} 45.8 \\ 326.6 \end{pmatrix} & \begin{pmatrix} 57.5 \\ 504.6 \end{pmatrix} & \begin{pmatrix} 69.7 \\ 858.2 \end{pmatrix} & \begin{pmatrix} 82.3 \\ 1351.9 \end{pmatrix} \\
\begin{pmatrix} 19.4 \\ 123.6 \end{pmatrix} & \begin{pmatrix} 30.2 \\ 315.8 \end{pmatrix} & \begin{pmatrix} 41.6 \\ 513.9 \end{pmatrix} & \begin{pmatrix} 53.3 \\ 680.7 \end{pmatrix} & \begin{pmatrix} 65.5 \\ 810.1 \end{pmatrix} & \begin{pmatrix} 78 \\ 921 \end{pmatrix} \\
\begin{pmatrix} 24.7 \\ 60.8 \end{pmatrix} & \begin{pmatrix} 35.6 \\ 53. \end{pmatrix} & \begin{pmatrix} 46.9 \\ 43.2 \end{pmatrix} & \begin{pmatrix} 58.7 \\ 90.2 \end{pmatrix} & \begin{pmatrix} 70.9 \\ 198.1 \end{pmatrix} & \begin{pmatrix} 83.6 \\ 380.5 \end{pmatrix}
\end{pmatrix}$$

```
data[k_] := Flatten[Transpose[{t[[k]], t[[3 + k]]}], 1];
Table[ListPlot[data[k], Joined → True], {k, 1, 3}]
```
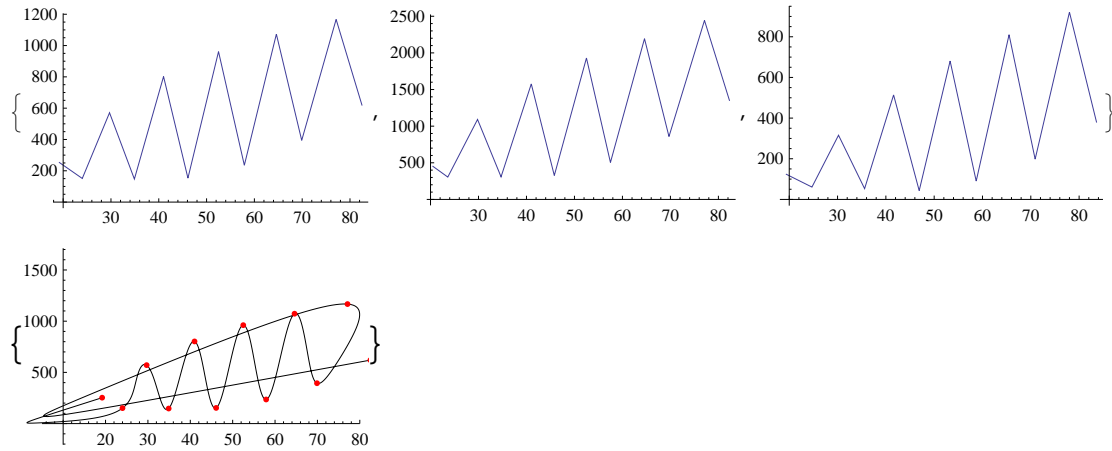


```
uparam[pts_] := N[Range[0, 1, 1 / (Length[pts] - 1)]];
kfun[n_, d_] := Join[ConstantArray[0, d], Range[0, 1, 1 / (n - d)], ConstantArray[1, d]];
mbasis[pts_, n_, d_] := With[{param = uparam[pts]},
    Table[BSplineBasis[{d, kfun[n, d]}, j - 1, param[[i]]], {i, Length[param]}, {j, n}]];
npts[pts_, t_, k_, d_] := With[{ctrlpts = LeastSquares[mbasis[pts, k, d], pts]},
   Sum[ctrlpts[[i + 1]] BSplineBasis[{d, kfun[k, d]}, i, t], {i, 0, k - 1}]]
curves[pts_, k_, d_, {min_, max_}] := With[{ctrlpts = LeastSquares[mbasis[pts, k, d], pts]},
   Graphics[{BSplineCurve[ctrlpts, SplineDegree → d], Red, Point@pts}, Axes → True,
    AspectRatio → 1 / GoldenRatio, PlotRange → {{min, max}, Automatic}]]
Manipulate[curves[data[k], b, a, {min, max}], {a, 2, 8, 1},
 {b, 30, 140, 5}, {min, 5, 80}, {max, 20, 80}, {k, 1, 3}]
```