```
> read("/tmp/mydata.txt");
```

data := [[6.399555221, −2.975032259], [0.972268069, 4.644979231], [−0.174930733, 2.313538498], [−5.073540384, 9.514984401], [6.893861527, −1.071097006], [1.510235158, 4.569017281], [0.955599370, 4.097468044], [−5.712634201, 9.544519402], [0.691425053, 3.830846574], [−6.708865618, 9.962202300], [3.761176009, 1.978739404], [3.172070319, 0.432025264], [−2.684165704, 7.561362842], [−4.250626903, 8.100249035], [0.201116234, 3.609631780], [5.514142588, −0.466174813], [4.722721945, 1.119994312], [7.636264182, −3.679228223], [−4.873069134, 7.999031928], [−5.019405423, 8.742503689], [4.811048112, −0.901298665], [−0.504420785, 6.102454305], [6.576501459, −3.495854902], [−0.796916715, 3.623549343], [1.325774350, 2.186174499]] **(1)**

```
> with(HTTP):
> URL:="http://www.math.sunysb.edu/~scott/mat331.
  spr12/problems/prob89.txt";
> status,webfile,headers:=Get(URL): Code(status);
```

URL := "http://www.math.sunysb.edu/~scott/mat331.spr12/problems/prob89.txt"

"OK" **(2)**

```
> status;
```

200 **(3)**

```
> webfile;
```

"prob8 := [[-1.9, -4.7], [-.8, 1.2], [.1, 2.8], [1.4, -1.2], [1.8, -3.5]]; **(4)**
prob9 := [[1.02, -4.30], [1.00, -2.12], [.99, .52], [1.03, 2.51], [1.00, 3.34]
, [1.02, 5.30]];
"

```
> prob8;
```

prob8 **(5)**

```
> n:=0:
> while (n < length(webfile)) do
>  parse(webfile,statement,lastread='n', offset=n);
> od:
```

```
> prob8;
```

[[−1.9, −4.7], [−0.8, 1.2], [0.1, 2.8], [1.4, −1.2], [1.8, −3.5]] **(6)**

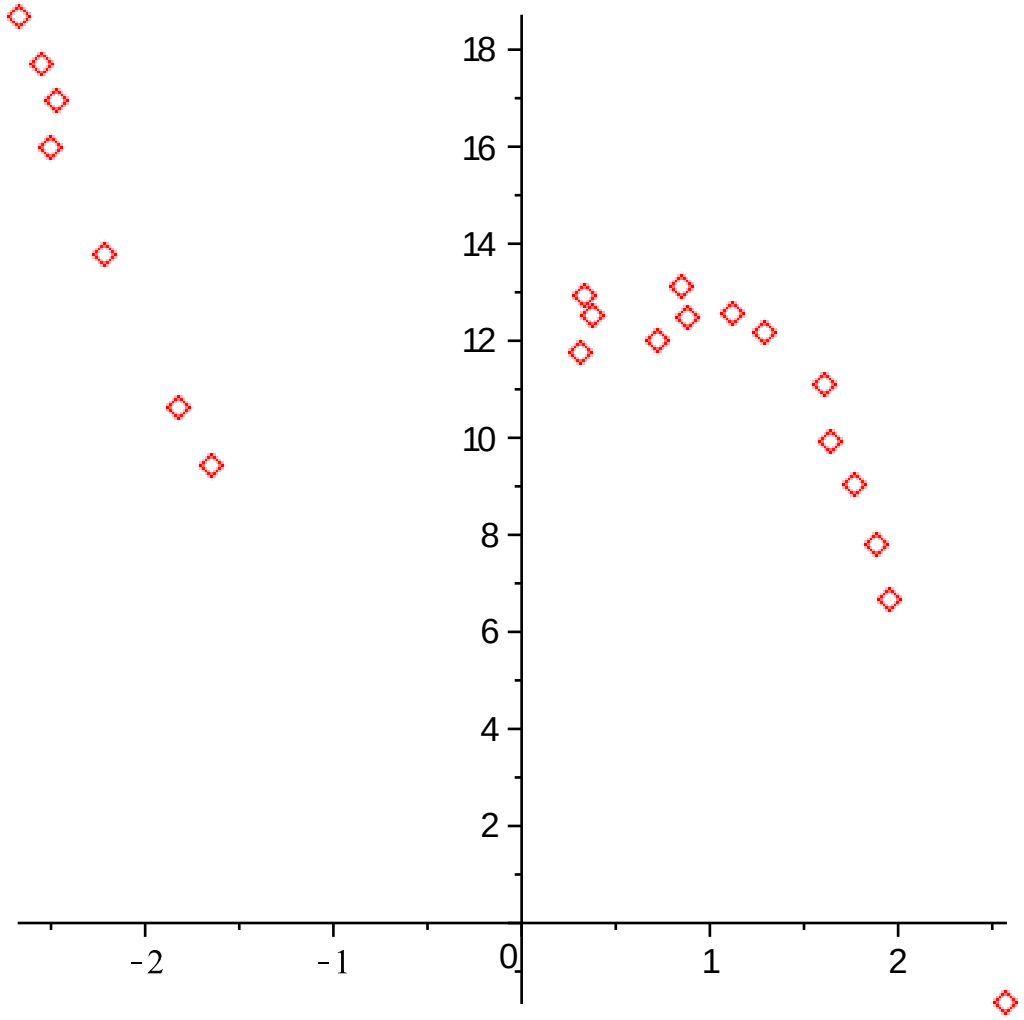
```
> with(HTTP):
> URL:="http://www.math.sunysb.edu/~scott/mat331.
  spr12/problems/lsq_data.txt" ;
> status,webfile,headers:=Get(URL): Code(status);
> n:=0:
> while (n < length(webfile)) do
>  parse(webfile,statement,lastread='n', offset=n);
> od:
```

URL := "http://www.math.sunysb.edu/~scott/mat331.spr12/problems/lsq_data.txt"

"OK"

defined line_pts(), bad_line_pts(), quadratic_pts(), cubic_pts(), and circle_pts()

```
> cdata:=cubic_pts():
  plot(cdata,style=point,symbolsize=18);
```




```
> cdata;
```

[[−1.929184041, 0.5550036025], [1.642921590, −0.6966914010], [2.499763912, 10.98083358], [2.827123504, 18.71096808], [−1.413134531, 1.539969238], [−1.478037712, 1.838845951], [−0.365917626, −0.7455951943], [−0.672135846, 0.1434841543], [2.945045597, 21.22810830], [1.369773799, −1.932362621], [1.378110521, −2.325908916], [−1.300139421, 2.616849559], [−0.241553700, −1.196568180], [−2.098843596, −0.9650169735], [−2.993477411, −11.36974567], [−0.581297164, −0.04178258956], [2.978077293, 22.47846769], [−2.770509452, −6.477856476], [2.069661514, 3.239356938], [0.318545137, −3.504731888], [2.462088545, 10.09789707]] **(7)**

```
> randomize(14):
  cdata:=cubic_pts();
```

cdata := [[−1.507535348, −1.749675573], [2.305576675, −44.56329772], [−0.395151257, −1.121827236], [1.759599104, −26.43727961], [1.372877504, −17.68978995], [−2.433491875, −2.108677682], [−1.256554758, −1.455713483], [−1.088142522, −1.308994195], [1.788428774, −27.12650464], [−0.619836326, −0.5273213367], **(8)**

```
    [1.845750408, -29.30803342], [-0.964284897, -0.9421725791], [1.604553029,
    -22.84391480], [2.920234676, -73.13465763], [-2.957190954, -0.884420839],
    [2.883945098, -71.41853170], [0.394668262, -3.852018915], [-2.686026763,
    -1.049114702], [-0.797909874, -0.6499129669], [0.742318936, -8.003213395],
    [0.079486087, -2.617725478]]
> randomize(14):
  cdata:=cubic_pts();
```

$$cdata := [[-1.507535348, -1.749675573], [2.305576675, -44.56329772], [-0.395151257, -1.121827236], [1.759599104, -26.43727961], [1.372877504, -17.68978995], [-2.433491875, -2.108677682], [-1.256554758, -1.455713483], [-1.088142522, -1.308994195], [1.788428774, -27.12650464], [-0.619836326, -0.5273213367], [1.845750408, -29.30803342], [-0.964284897, -0.9421725791], [1.604553029, -22.84391480], [2.920234676, -73.13465763], [-2.957190954, -0.884420839], [2.883945098, -71.41853170], [0.394668262, -3.852018915], [-2.686026763, -1.049114702], [-0.797909874, -0.6499129669], [0.742318936, -8.003213395], [0.079486087, -2.617725478]] \quad (9)$$

```
> randomize(15):
  cdata:=cubic_pts();
```

$$cdata := [[-1.547347526, 15.82299300], [-0.430020893, 4.863723431], [-2.810578661, 51.73367114], [1.396154776, 3.810958129], [2.922444290, -1.318287245], [2.916457850, -0.9568732164], [-1.819055629, 22.14555582], [1.579159463, 4.471113274], [-0.311538577, 3.609146556], [-1.630755059, 18.87211607], [-1.019753889, 9.346384784], [-0.148209387, 3.449554938], [-1.022604609, 8.378891316], [0.365250554, 3.389127500], [-1.905207791, 24.16029786], [-1.666947119, 18.45186357], [0.911405027, 4.192171100], [-0.754205210, 6.885720994], [-0.679370125, 5.986610467], [-2.578921375, 43.69001657], [-0.675184454, 6.571765352]] \quad (10)$$

```
> randomize(1):cdata:=cubic_pts():
  cplot:=plot(cdata,style=point,symbolsize=18);
```

$$cplot := PLOT(\ldots) \quad (11)$$

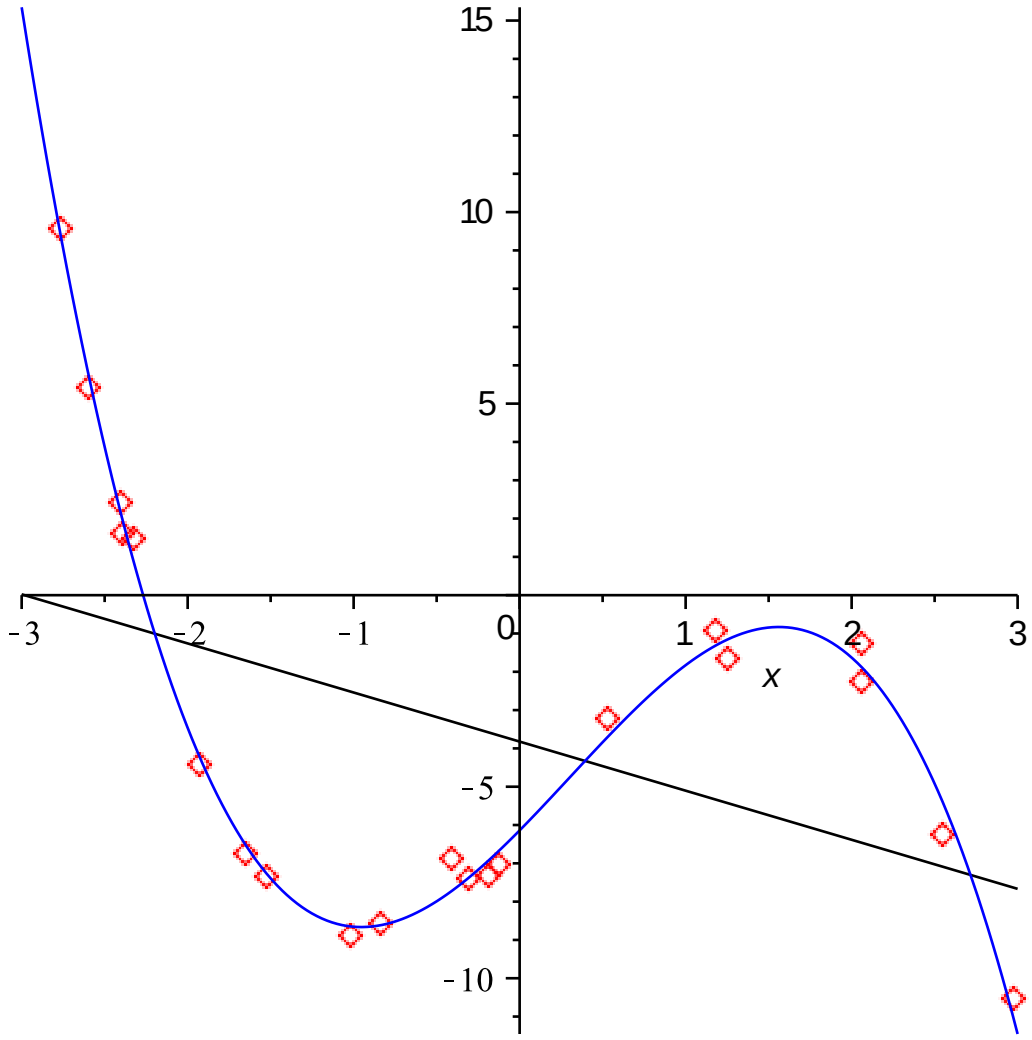
```
> with(CurveFitting):
> line:=LeastSquares(cdata, x);
```

$$line := -3.82223548692727 - 1.28134670097325\,x \quad (12)$$

```
> cubby:=LeastSquares(cdata, x, curve=a*x^3 + b*x^2 + c*x + d);
```

$$cubby := -6.14022804860716 + 4.39915562122190\,x + 0.898453541470455\,x^2 - 0.985141463835931\,x^3 \quad (13)$$

```
> with(plots):
> display( plot(cdata,style=point,symbolsize=18),
    plot([line, cubby], x=-3..3, color=[black,blue]));
```



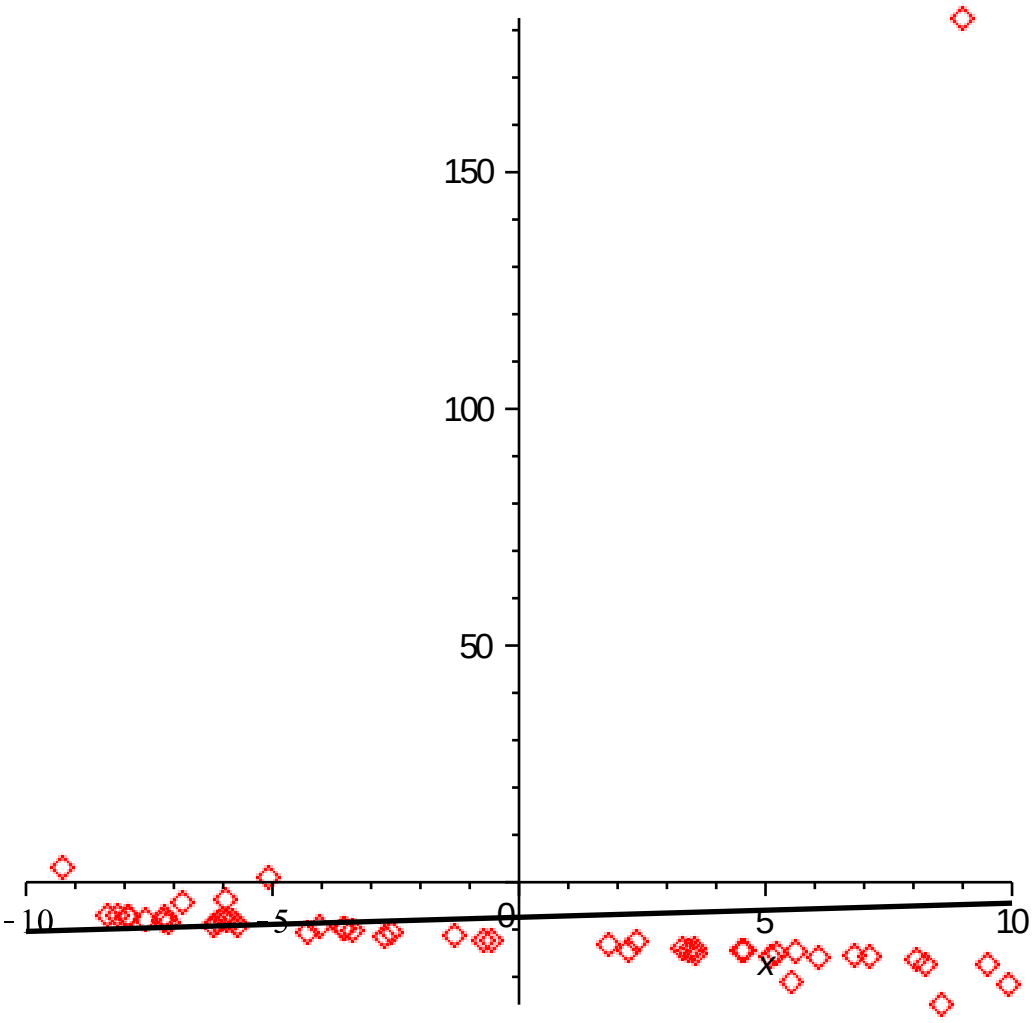

```
> bdata:=bad_line_pts():
  bplot:=plot(bdata,style=point,symbolsize=18);
```

$$bplot := PLOT(\ldots) \tag{14}$$

```
> l:=LeastSquares(bdata,x);
```

$$l := -7.41333552261375 + 0.298834125512807\,x \tag{15}$$

```
> display(bplot,plot(l,x=-10..10, color=black, thickness=2));
```

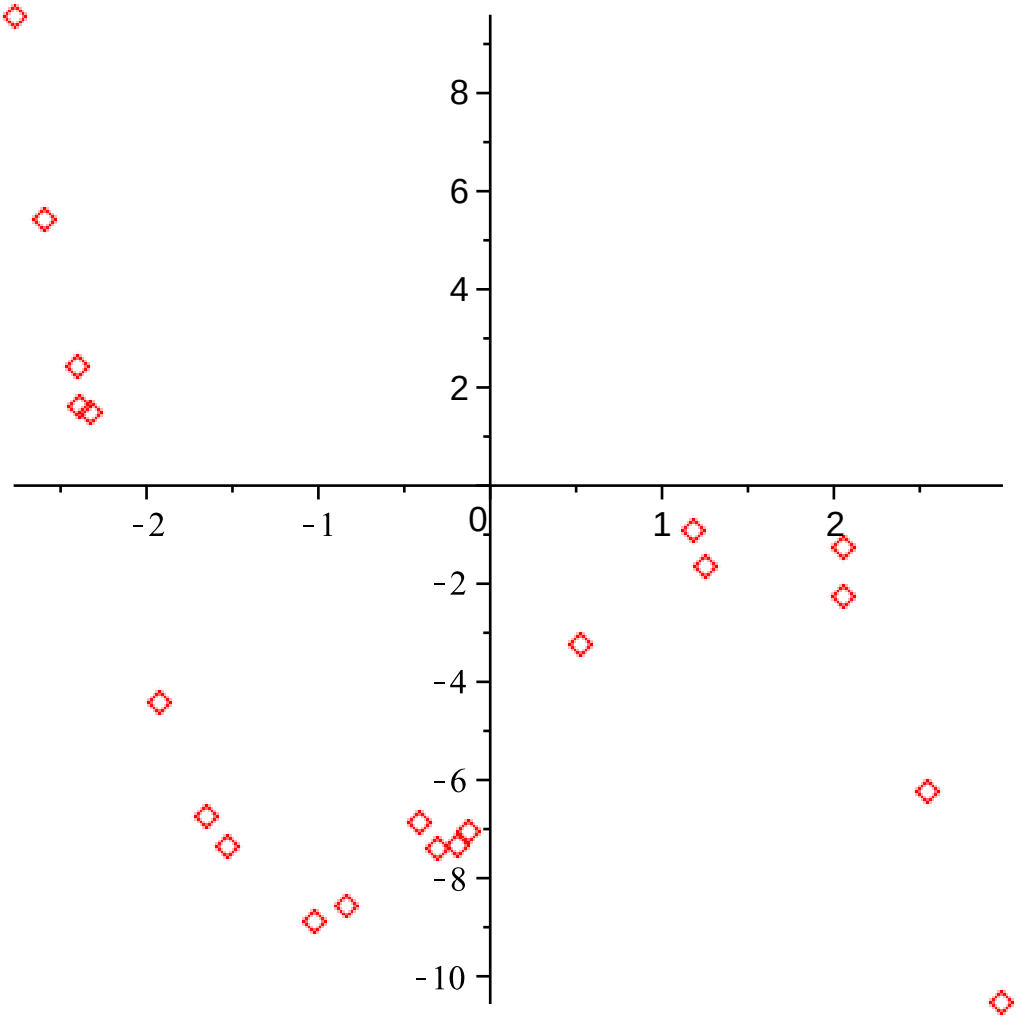



```
> nops(bdata);
```

$$50 \tag{16}$$

$$exp\_data(\,) \tag{17}$$

```
> cplot;
```




```
> LeastSquares(cdata,x,curve=a*cos(x-b));
```

Error, (in CurveFitting:-LeastSquares) curve to fit is not linear in the parameters

```
> LeastSquares(cdata,x,curve=a*cos(x)-c);
```

$$-3.43177132006839 - 3.87740304935183\cos(x) \tag{18}$$