```
/*  SAS program to perform linear regression.  Data  */
/*  are observations of Old Faithful Geyser in       */
/*  Yellowstone National Park.  Predictor variable   */
/*  x = duration in minutes of present eruption;     */
/*  response variable y = time in minutes until next */
/*  eruption.                                        */

options nocenter ls=72;
data;
   input x y;
   cards;
   1.80 56
   1.82 58
   1.88 60
   1.90 62
   1.92 60
   1.93 56
   1.98 57
   2.03 60
   2.05 57
   2.13 60
   2.30 57
   2.35 57
   2.37 61
   2.82 73
   3.13 76
   3.27 77
   3.65 77
   3.70 82
   3.78 79
   3.83 85
   3.87 81
   3.88 80
   4.10 89
   4.27 90
   4.30 84
   4.30 89
   4.43 84
   4.43 89
   4.47 86
   4.47 80
   4.53 89
   4.55 86
   4.60 88
   4.60 92
   4.63 91
   ;
```

```
proc reg;
     model y=x / influence;
     output out=new predicted=yhat residual=res
       l95m=mulo u95m=muhi l95=pylo u95=pyhi;
proc plot;
     plot res*yhat='O';
     plot (pylo yhat pyhi)*x='-' y*x='O' /overlay;
run;
```

```
The REG Procedure
Model: MODEL1
Dependent Variable: y

                        Analysis of Variance

                                 Sum of          Mean
Source                  DF      Squares        Square  F Value  Pr > F

Model                    1   5600.35710   5600.35710   521.50  <.0001
Error                   33    354.38575     10.73896
Corrected Total         34   5954.74286


Root MSE              3.27704    R-Square     0.9405
Dependent Mean       74.51429    Adj R-Sq     0.9387
Coeff Var             4.39786


                        Parameter Estimates

                     Parameter       Standard
Variable     DF       Estimate          Error    t Value    Pr > |t|

Intercept     1       35.30117        1.80427      19.57      <.0001
x             1       11.82441        0.51779      22.84      <.0001
```

The REG Procedure
Model: MODEL1
Dependent Variable: y

Output Statistics

Obs	Residual	RStudent	Hat Diag H	Cov Ratio	DFFITS
1	-0.5851	-0.1840	0.0860	1.1610	-0.0564
2	1.1784	0.3709	0.0845	1.1517	0.1126
3	2.4689	0.7809	0.0801	1.1132	0.2304
4	4.2325	1.3629	0.0786	1.0311	0.3982
5	1.9960	0.6282	0.0772	1.1246	0.1818
6	-2.1223	-0.6683	0.0766	1.1202	-0.1924
7	-1.7135	-0.5372	0.0732	1.1270	-0.1509
8	0.6953	0.2168	0.0699	1.1400	0.0594
9	-2.5412	-0.7991	0.0686	1.0976	-0.2169
10	-0.4872	-0.1513	0.0637	1.1342	-0.0395
11	-5.4973	-1.7809	0.0544	0.9309	-0.4270
12	-6.0885	-1.9921	0.0519	0.8878	-0.4660
13	-2.3250	-0.7230	0.0509	1.0848	-0.1675
14	4.3540	1.3702	0.0347	0.9830	0.2599
15	3.6884	1.1480	0.0294	1.0108	0.1999
16	3.0330	0.9373	0.0286	1.0371	0.1609
17	-1.4603	-0.4472	0.0314	1.0843	-0.0805
18	2.9485	0.9123	0.0322	1.0439	0.1665
19	-0.9974	-0.3054	0.0339	1.0945	-0.0572
20	4.4113	1.3896	0.0352	0.9803	0.2653
21	-0.0616	-0.0189	0.0362	1.1034	-0.0037
22	-1.1799	-0.3619	0.0365	1.0948	-0.0705
23	5.2188	1.6724	0.0439	0.9407	0.3584
24	4.2086	1.3340	0.0513	1.0060	0.3101
25	-2.1461	-0.6672	0.0527	1.0921	-0.1574
26	2.8539	0.8920	0.0527	1.0689	0.2105
27	-3.6833	-1.1653	0.0595	1.0406	-0.2932
28	1.3167	0.4091	0.0595	1.1191	0.1029
29	-2.1563	-0.6737	0.0618	1.1020	-0.1729
30	-8.1563	-2.8292	0.0618	0.7253	-0.7261
31	0.1343	0.0417	0.0653	1.1377	0.0110
32	-3.1022	-0.9792	0.0666	1.0740	-0.2615
33	-1.6934	-0.5299	0.0697	1.1234	-0.1451
34	2.3066	0.7245	0.0697	1.1066	0.1983
35	0.9518	0.2973	0.0717	1.1393	0.0826

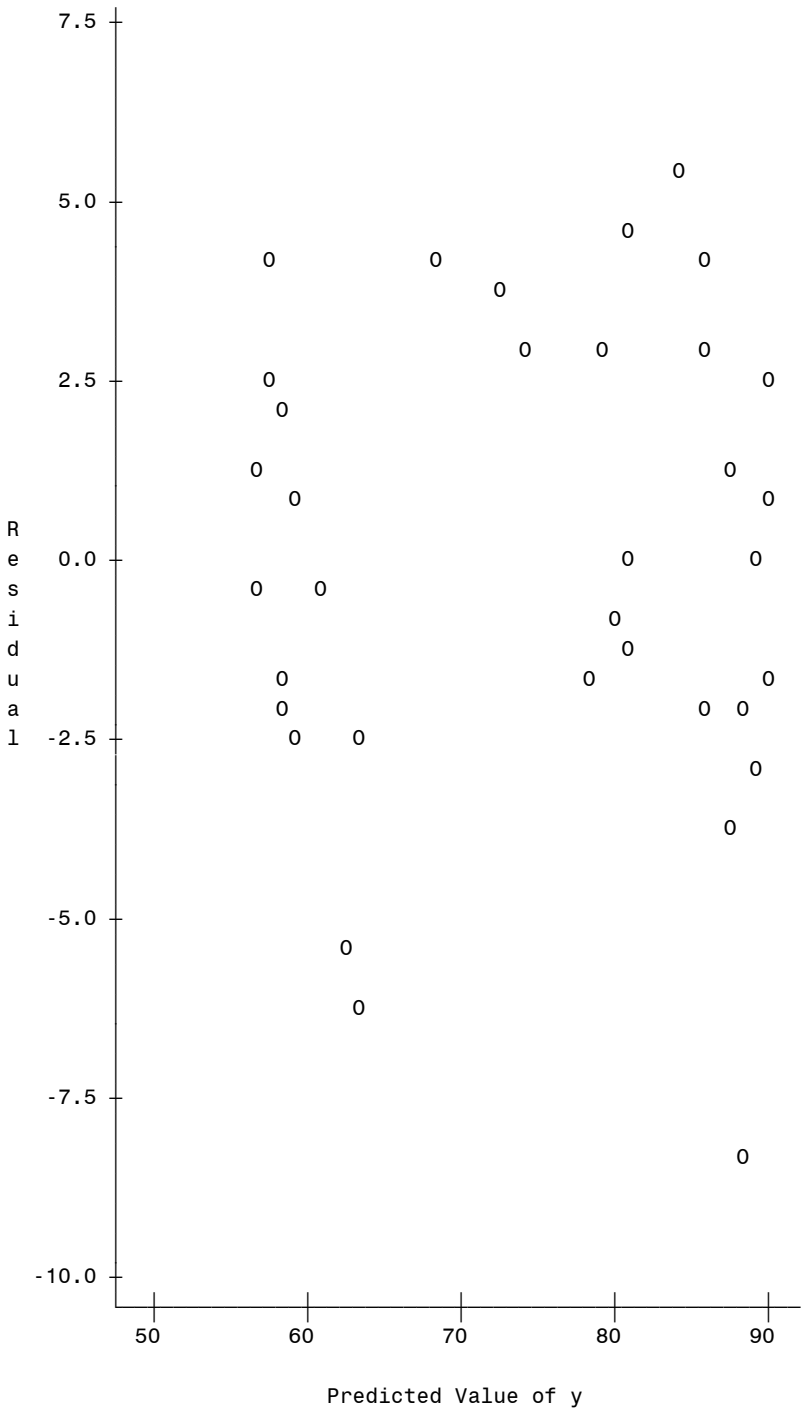
The REG Procedure
Model: MODEL1
Dependent Variable: y

Output Statistics

Obs	DFBETAS Intercept	DFBETAS x
1	-0.0539	0.0461
2	0.1073	-0.0916
3	0.2181	-0.1848
4	0.3761	-0.3177
5	0.1713	-0.1443
6	-0.1811	0.1523
7	-0.1411	0.1178
8	0.0551	-0.0457
9	-0.2006	0.1657
10	-0.0360	0.0293
11	-0.3749	0.2941
12	-0.4034	0.3124
13	-0.1441	0.1110
14	0.1764	-0.1094
15	0.0931	-0.0343
16	0.0560	-0.0070
17	-0.0008	-0.0240
18	-0.0054	0.0562
19	0.0055	-0.0228
20	-0.0359	0.1148
21	0.0006	-0.0017
22	0.0121	-0.0328
23	-0.1128	0.2118
24	-0.1253	0.2064
25	0.0658	-0.1066
26	-0.0880	0.1425
27	0.1389	-0.2114
28	-0.0488	0.0742
29	0.0846	-0.1268
30	0.3552	-0.5325
31	-0.0056	0.0083
32	0.1354	-0.1976
33	0.0775	-0.1114
34	-0.1060	0.1524
35	-0.0449	0.0640

Sum of Residuals	0
Sum of Squared Residuals	354.38575
Predicted Residual SS (PRESS)	396.04471

Plot of res*yhat. Symbol used is 'O'.



```
                 Plot of pylo*x.  Symbol used is '-'.
                 Plot of yhat*x.  Symbol used is '-'.
                 Plot of pyhi*x.  Symbol used is '-'.
                 Plot of y*x.     Symbol used is 'O'.

L
o
w 100 +
e
r                                                                  -
                                                                 - -
B                                                                -
o                                                            -
u                                                                  O
n  90 +                                                  -  O     -
d                                                    -   O  O  - -O
                                                   ---         -
o                                              -- O       -  O O
f                                                      -  O  O
                                                                 --
9                                      -       O  -         - -
5  80 +                                          --O      -  O
%                                  -         --O        -
                                      O      O       -
C                              -    O
.                                         -         --
I                              O    -          --
.                                              -
(  70 +              ---
I                              -
n                --                        -
d              ---                     -
i            ---
v          -        ---
i            O        O       -
d  60 +      OO --
u           O --
a          --- OO   OO-
l         O  O     --
                -
P               -
r            ---
e  50 +    ---
d
)
      1.5       2.0       2.5       3.0       3.5       4.0       4.5       5.0

                                        x

NOTE: 34 obs hidden.
```