

The following is the input file web2.par. It is similar to web1.par with 2 exceptions: the data is weighted based upon a constant fractional error model and the data is reanalyzed using a 2nd function (a straight line).

```
! Fitting a parabola to 10 data points
y='a1 + a2*x + a3*x^2'
ncol=2 xcol=1 ycol=2
sytype=3 ! weight data using constant fractional error
;

! x      y

  1      2.047
  2     -0.966
  3     -1.923
  4     -1.064
  5      2.048
  6      6.573
  7     13.647
  8     24.679
  9     34.108
 10     44.969
;

! Adding a 2nd function: A straight line
! To invoke this function respond y to the Continue? prompt.

y = 'a1 + a2*x' ;
```

The following is the output file web2.out. The information included on this file is also shown on the screen. In this example the data is analyzed first using a parabola and then a straight line. The data is weighted using a constant fractional error model. Note that the results for the straight line fit (Set 2) are poor, showing a negative variance reduction.

PARAMETERS USED IN REGRESS ANALYSIS: Wed Nov 01 16:00:53 2006

```
INPUT PARMS FILE: web2.par
INPUT DATA FILE: web2.par
REGRESS VERSION: 4.16, Oct 31, 2006

STARTREC - First record used      :      1
N - Number of recs used to build model :     10
NO_DATA - Code for dependent variable  -999.0
NCOL - Number of data columns      :      2
NY - Number of dependent variables  :      1
YCOL1 - Column for dep var Y        :      2
SYTYPE1 - Sigma type for Y          :      3
      TYPE 3: SIGMA Y = CY1 * Y    CY1: 1.000
M - Number of independent variables  :      1
Column for X1                        :      1
SXTYPE1 - Sigma type for X1         :      0
      TYPE 0: SIGMA X1 = 0
```

Analysis for Set 1

Function Y: $A1 + A2*X + A3*X^2$

EPS - Convergence criterion : 0.00100
 CAF - Convergence acceleration factor : 1.000

ITERATION	A1	A2	A3	S/(N.D.F.)
0	0.00000	0.00000	0.00000	1.42857
1	7.08592	-6.02551	0.99950	0.00222

POINT	X1	Y	SIGY	YCALC
1	1.00000	2.04700	2.04700	2.05991
2	2.00000	-0.96600	0.96600	-0.96711
3	3.00000	-1.92300	1.92300	-1.99514
4	4.00000	-1.06400	1.06400	-1.02418
5	5.00000	2.04800	2.04800	1.94578
6	6.00000	6.57300	6.57300	6.91473
7	7.00000	13.64700	13.64700	13.88266
8	8.00000	24.67900	24.67900	22.84959
9	9.00000	34.10800	34.10800	33.81552
10	10.00000	44.96900	44.96900	46.78043

K	A0(K)	AMIN(K)	AMAX(K)	A(K)	SIGA(K)
1	0.00000	Not Spec	Not Spec	7.08592	0.15170
2	0.00000	Not Spec	Not Spec	-6.02551	0.10198
3	0.00000	Not Spec	Not Spec	0.99950	0.01567

Variance Reduction: 99.72

S/(N - P) : 0.00222

RMS (Y - Ycalc) : 0.83086

RMS ((Y-Ycalc)/Sy): 0.03941

Runs Test: Number runs = 7 Must be > 2 to pass test.
 This limit is based upon 2.5% confidence level.
 Average number of runs if residuals random: 6.0.

Analysis for Set 2

Function Y: $A1 + A2*X$

EPS - Convergence criterion : 0.00100
 CAF - Convergence acceleration factor : 1.000

ITERATION	A1	A2	S/(N.D.F.)
0	0.00000	0.00000	1.25000
1	-1.37754	0.31590	1.13105

POINT	X1	Y	SIGY	YCALC
1	1.00000	2.04700	2.04700	-1.06164
2	2.00000	-0.96600	0.96600	-0.74574
3	3.00000	-1.92300	1.92300	-0.42985
4	4.00000	-1.06400	1.06400	-0.11395
5	5.00000	2.04800	2.04800	0.20195
6	6.00000	6.57300	6.57300	0.51785
7	7.00000	13.64700	13.64700	0.83375

8	8.00000	24.67900	24.67900	1.14965
9	9.00000	34.10800	34.10800	1.46555
10	10.00000	44.96900	44.96900	1.78144

K	A0 (K)	AMIN (K)	AMAX (K)	A (K)	SIGA (K)
1	0.00000	Not Spec	Not Spec	-1.37754	1.66164
2	0.00000	Not Spec	Not Spec	0.31590	0.51580

Variance Reduction: -48.19

S/(N - P) : 1.13105

RMS (Y - Ycalc) : 19.23908

RMS ((Y-Ycalc)/Sy): 0.95123

Runs Test for Y: Number runs = 3 Must be > 2 to pass test.

This limit is based upon 2.5% confidence level.

Average number of runs if residuals random: 6.0.