

Approximate Curve Equation

\$ Introduction

An approximate curve equation $Y = F(X)$ for the experimental data sets (X,Y) and its graph can be gotten.

\$ Function



<Input Data> button:

Opens a window for inputting data.



<Read Data> button:

Opens a window for reading a data file which was saved by <Save Data>, or which was prepared by Excel (*1).

(*1) : Active-sheet file with Tab, Space, or Comma partitions.



<Paste Data> button:

Pastes data sets (X,Y) (*2), which were copied to the Clipboard from Excel.

(*2) : Refer to the following.

	A2		1
	A	B	C
1	X	Y	
2	1	2.1	
3	2	2.9	
4	3	4.1	
5	4	4.9	
6	5	6.1	
7			

Data to be copied to the Clipboard from Excel

If more than two column data are copied to the Clipboard, a dialog box by which you can select the columns to be pasted appears on the screen.



<Analysis> button:

Gets an approximate curve equation for the inputted data.



<Save Data> button:

Saves the inputted data and the curve equation obtained as text format.



<Draw Graph> button:

Draws a graph of the approximate curve with points of the inputted data.



<Copy Graph> button:

Copies the graph to the Clipboard.



<Save Graph> button:

Saves the graph as bitmap format.



<About> button:

Shows version information.



<Help> button:
Shows this file.



<Exit> button:
Exits the application.

\$ How to Use (example)

Let us suppose that the following are experimental data.

X	Y
1	1.1
2	4
3	9
4	16.7
5	22
6	20
7	16
8	12
9	8.9
10	-5.6
11	6
12	9
13	14.78
14	18
15	24.427

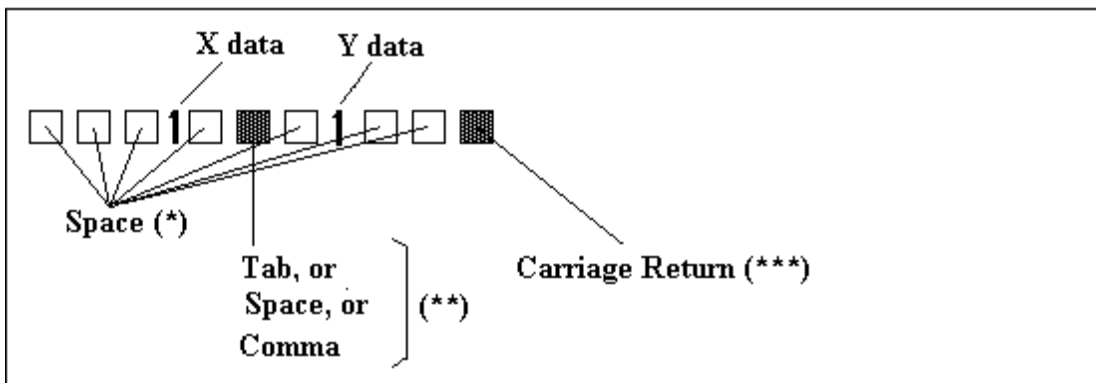
- In this case, (1) press <Input Data> button, and then input data,
 (2) press <Analysis> button for getting an approximate curve equation,
 (3) press <Draw Graph> button for getting a graph.

If necessary, use <Save Data> , <Copy Graph>, and/or <Save Graph> buttons.

\$ Readable Data File

A data file (xxx.TXT) with a series of the following format can be read by the application. In other words, an active-sheet file of Excel, which was prepared by Tab, Space, or Comma partitions, can be read.

[Note] The data file should have a TXT extension.



(*): Space(s) before X data, space(s) between X/Y data, and/or, space(s) after Y data are allowable.

(): Tab, Space, or Comma is used as a partition between X data and Y data.**

When using Tab or Comma as a partition, only one Tab or only one Comma should be used. In these cases, space(s) before/after Tab or Comma are allowable.

When using Space as a partition, one (or, two, three, ...) space(s) should be used.

(): A Carriage Return should be placed at the end of one set of X/Y data.**

Space(s) between Y data and Carriage Return are allowable.

Others:

- 1. Maximum number of digits for X/Y data are 10 , including - (minus) sign and a decimal point. An exponential notation number (e.g. 3.5E3) is not readable.**
- 2. Maximum number of X/Y data sets are 45. If a data file has 50 X/Y data sets, only 45 X/Y data sets from the top are read.**

\$ File saved by <Save Data>

Active-sheet file of Excel, which has Tab partition, is saved by <Save Data>.

When reading a data file saved by <Save Data>, only X/Y data are read, excluding the equation in the file.

\$ Others

- 1) If a data file has several SAME values for X data, first value for the X data is used.**
- 2) Good fitting impression of the approximate curve to the inputted data is not always obtained for the higher degree equation. Please get a better equation by trial and error.**
- 3) Attached files (TEST_COM.TXT, TEST_SPC.TXT, and TEXT_TAB.TXT) are examples for the data files with Comma, Space, and Tab partitions respectively, which can be read by the application.**

\$ When encountered the a bit poor fitting curve

The following example actually has (X,Y) data sets between X=50 and X=1000.

However, (X,Y) data sets between X=1100 and X=1500 are artificially added by symmetrical way. In other words, Y data for X=1100 is as same as that of X=900, Y data for X=1150 is as same as that of X=850, Y data for X=1200 is as same as that of X=800, and so on.

Artificial (X,Y) data sets are suggested to be between 5 and 10.

Then, apply the "Approximate Curve Equation."

Of course, applicable range of X value for the obtained curve must be limited between X=50 and X=1000.

By this method, a bit better fitting curve might be expected.

X	Y
50	31.0
60	34.8
70	37.9
80	40.5
100	44.7
120	49.7
140	54.7
160	59.5
180	63.9
200	68.1

220	72.0
240	75.6
260	79.1
280	81.2
300	82.3
330	83.8
360	85.3
390	86.7
430	88.1
460	89.5
500	90.8
540	92.1
600	93.3
650	93.9
700	94.5
750	95.1
800	95.6
850	96.0
900	96.4
1000	96.7 <--- until this line, actual data.
1100	96.4 <--- from this line, artificially added data.
1150	96.0
1200	95.6
1250	95.1
1300	94.5
1400	93.3
1500	90.8