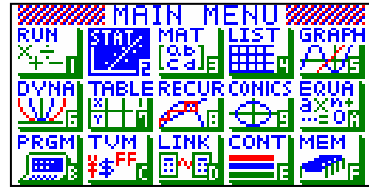


Curve fitting – straight lines, parabolas and cubics.

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Select STAT mode from the main menu by using the arrow keys to highlight the STAT icon or pressing 2.



Note:

1. To find the equation of a line, at least 2 points need to be known.
2. To find the equation of a parabola, at least 3 points need to be known.
3. To find the equation of a cubic, at least 4 points need to be known.

Example 1:

Find the equation of the line that passes through the points (5 , 0) and (25 , 80).

Answer:

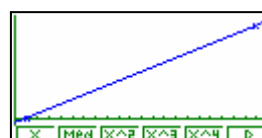
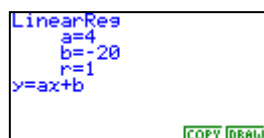
Set up List 1 for X data and List 2 for Y data.

Set up Grph 1 to be a scattergraph.

Enter in the x values in List 1 and the y values in list 2 spaces.



Press F1 to plot the scattergraph and the F1 again to select a linear model.



Equation required is $y = 4x - 20$

Example 2:

Find the equation of the parabola that passes through the points (2 , 3) (5 , 24) and (6 , 35)

Answer:

Set up List 1 for X data and List 2 for Y data.

Set up Grph 1 to be a scattergraph.

Enter in the x values in List 1 and the y values in list 2 spaces.

List 1	List 2	List 3	List 4
1	2	3	
2	5	24	
3	6	35	
4			
5			

Press F1 to plot the scattergraph and the F3 again to select a parabolic (quadratic) model.



```
QuadReg
a=1
b=0
c=-1
y=ax^2+bx+c
```



$$\text{Equation required is } y = 1x^2 + 0x - 1 = x^2 - 1$$

Example 3:

Find the equation of the cubic that passes through the points (0 , -6) (2 , 20) (4 , 126) and (-1 , -4).

Answer:

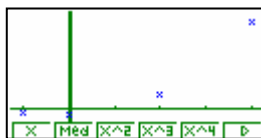
Set up List 1 for X data and List 2 for Y data.

Set up Grph 1 to be a scattergraph.

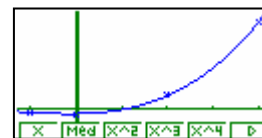
Enter in the x values in List 1 and the y values in list 2 spaces.

List 1	List 2	List 3	List 4
1	0	-6	
2	2	20	
3	4	126	
4	-1	-4	
5			

Press F1 to plot the scattergraph and the F4 again to select a cubic model.



```
CubicReg
a=1
b=4
c=1
d=-6
y=ax^3+bx^2+cx+d
```



$$\text{Equation required is } y = 1x^3 + 4x^2 + 1x - 6 = x^3 + 4x^2 + x - 6$$

- Note:
- That **F5** gives a quintic model.
 - That **F6** then **F1** gives a quintic model.
 - That **F6** then **F2** gives a logarithmic model.
 - That **F6** then **F3** gives an exponential model.
 - That **F6** then **F4** gives the **2 variable** summary statistics.