Quadratic Models

Recall:

- The graph of a quadratic function is called a _____.

- In the table values of a quadratic function, the _____ differences are constant.

- When the second differences are positive, the parabola opens _____.

- When the second differences are negative, the parabola opens _____.

Example 1   Use first and second differences to determine whether the following function is linear, quadratic, or neither.

x	y
0	21
5	14
10	9
15	6
20	5
25	6
30	9
35	14

Example 2   Use Desmos to find the equation for the line or parabola of best fit for the data in Example 1.

Step 1: Click on the plus sign and choose "table".

Step 2: Enter the data from the table.

Step 3: Click in the space below the table and type *exactly as shown*: y 1 ~ a x 1 a^2 + b x 1 + c

Step 4: Replace a, b, and c with the parameters given.

The equation of the parabola of best fit is $y = 0.04x^2 - 1.6x + 21$.