Polynomial Interpolation

Given n+1 data points, find the equation of a degree n polynomial $(c_1 + c_2x + c_3x^2 + \ldots c_{n+1}x^n = y)$ so that the data points lie on the graph of the equation.

That is, find a line that lies on 2 data points
find a parabola that lies on 3 data points
find a cubic that lies on 4 data points, etc.

This is an **exact fit.** There is **no error** for this model.

Method:
1. Write the general polynomial equation whose coefficients you are trying to find. $c_1 + c_2x + c_3x^2 + \ldots c_{n+1}x^n = y$
2. Form a system of equations by substituting each data point *(x,y)* into the equation for *x* and *y*.
3. Solve the system of equations to find the coefficients.