Lagrange interpolation is a method of finding a polynomial that passes through a given set of points. Given a set of points (x1, y1), (x2, y2), ..., (xn, yn), the Lagrange interpolation polynomial is defined as:

L(x) = y1 * L1(x) + y2 * L2(x) + ... + yn * Ln(x)

where Li(x) is defined as:

Li(x) = ∏(j!=i) (x - xj) / (xi - xj)

In other words, Li(x) is the product of all (x - xj) terms, where j ranges from 1 to n, except for j = i, divided by (xi - xj).

The steps for finding the Lagrange interpolation polynomial are as follows:

1. Given a set of n points (x1, y1), (x2, y2), ..., (xn, yn), determine the value of x for which you want to find the corresponding value of y.

2. For each i = 1, 2, ..., n, compute Li(x) using the formula above.

3. Compute L(x) using the formula above.

4. The value of y corresponding to x is given by L(x).

Here's an example:

Suppose we have the following set of points: (1, 3), (2, 5), (3, 9), and we want to find the value of y corresponding to x = 4.

1. We want to find L(4).

2. We compute L1(4), L2(4), and L3(4) using the formula above:

L1(4) = (4 - 2) * (4 - 3) / ((1 - 2) * (1 - 3)) = -2

L2(4) = (4 - 1) * (4 - 3) / ((2 - 1) * (2 - 3)) = 3

L3(4) = (4 - 1) * (4 - 2) / ((3 - 1) * (3 - 2)) = -2

3. We compute L(4) using the formula above:

L(4) = 3 * (-2) + 5 * 3 + 9 * (-2) = -3

4. Therefore, the value of y corresponding to x = 4 is -3.