

```

In[74]:= LagrangePolynomial[x0_, f0_] :=
Module[{xi = x0, fi = f0, n, m, Polynomial},
  n = Length[xi];
  m = Length[fi];
  If[n ≠ m,
    Print[
      "list of points and function value are not of the same size"]; Return[];];
  For[i = 1, i ≤ n, i++,
    L[i, x_] = (Product[((x - xi[[j]])/(xi[[i]] - xi[[j]])), {j, 1, i - 1}]) *
      (Product[((x - xi[[j]])/(xi[[i]] - xi[[j]])), {j, i + 1, n}]);];
  Polynomial[x_] = Sum[(L[k, x] * fi[[k]]), {k, 1, n}];
  Return[Polynomial[x]];]
nodes = {0, 1, 3}
value = {1, 3, 55}
LagrangePolynomial[nodes, value]

```

Out[75]= {0, 1, 3}

Out[76]= {1, 3, 55}

$$\text{Out[77]} = \frac{1}{3} (1 - x) (3 - x) + \frac{3}{2} (3 - x) x + \frac{55}{6} (-1 + x) x$$

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In[78]:= nodes = {1, 2, 3}
value = {1, 4, 8}
LagrangePolynomial[nodes, value]

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Out[78]= {1, 2, 3}

Out[79]= {1, 4, 8}

$$\text{Out[80]} = \frac{1}{2} (2 - x) (3 - x) + 4 (3 - x) (-1 + x) + 4 (-2 + x) (-1 + x)$$