

In[154]:=

```
y = {0, 1, 3};  
f = {1, 3, 55};  
n = Length[y];  
n = Length[f];  
dd[n_] := Sum[(f[[i]] /  
  ((Product[(y[[i]] - y[[j]]), {j, j = 1, i - 1}]) (Product[(y[[i]] - y[[j]]), {j, j = 1, i - 1}]))], {i, 1, n}]  
p[x_] = Sum[(dd[i] * Product[If[i ≤ j, 1, x - y[[j]]], {j, 1, i - 1}]), {i, 1, n}]  
Print["Newton Polynomial =", p[x]]  
Print["Simplified Newton Polynomial =", Simplify[p[x]]]
```

Out[159]=

$$1 + 4x + \frac{199}{36}(-1 + x)x$$

$$\text{Newton Polynomial} = 1 + 4x + \frac{199}{36}(-1 + x)x$$

$$\text{Simplified Newton Polynomial} = 1 + 4x + \frac{199}{36}(-1 + x)x$$