1. (7) Recall that the polynomial
\[ a_1x^n + a_2x^{n-1} + \ldots + a_n \]
can be evaluated by Horner’s rule (nested multiplication) like this:
\[
p = a_1
\]
For \( j = 2, \ldots, n, \)
\[
p = p \times x + a_j.
\]
end for
Write a program that uses nested multiplication to evaluate
\[ c_1 + c_2(x - z_1) + c_3(x - z_1)(x - z_2) + \ldots + c_n(x - z_1)(x - z_2) \ldots (x - z_{n-1}), \]
where the coefficients \( c_i \) and the numbers \( z_i \) are given in arrays \( c \) and \( z. \)
**Answer:**
\[
p = c_n
\]
For \( j = n - 1 : -1 : 1, \)
\[
p = p \times (x - z_j) + c_j.
\]
end for

2. (7) Given that \((x, f(x)) = (0, -3), (2, 6), (-1, 5),\) compute \(f[0, 2, -1].\)
**Answer:** Divided difference table:
\[
\begin{array}{ccc}
 f[x] & f[x,y] & f[x,y,z] \\
-3 & & \\
6 & 9/2 & \\
-5 & 11/3 & 9/2-11/3 \\
\end{array}
\]
So \( f[1, 2, 3] = 9/2 - 11/3 = 5/6. \)

3. (6) Write down the Lagrange form of the interpolating polynomial for the data \((x, f(x)) = (1, 5), (3, 3).\)
**Answer:**
\[
p(x) = -5 \frac{x - 3}{1 - 3} + (-3) \frac{x - 1}{3 - 1}.
\]