

Show all work. You may leave arithmetic expressions in any form that a calculator could evaluate. By putting your name on this paper, you agree to abide by the university's code of academic integrity in completing the quiz. Use no books, calculators, cellphones, communication with others, scratchpaper, etc.

Name \_\_\_\_\_

Student number \_\_\_\_\_

- (7) Recall that the polynomial

$$a_1x^n + a_2x^{n-1} + \dots + a_n$$

can be evaluated by Horner's rule (nested multiplication) like this:

$$p = a_1$$

For  $j = 2, \dots, n$ ,

$$p = p * x + a_j.$$

end for

Write a program that uses nested multiplication to evaluate

$$c_1 + c_2(x - z_1) + c_3(x - z_1)(x - z_2) + \dots + c_n(x - z_1)(x - z_2) \dots (x - z_{n-1}),$$

where the coefficients  $c_i$  and the numbers  $z_i$  are given in arrays **c** and **z**.

2. (7) Given that  $(x, f(x)) = (0, -3), (2, 6), (-1, -5)$ , compute  $f[0, 2, -1]$ .

3. (6) Write down the Lagrange form of the interpolating polynomial for the data  $(x, f(x)) = (1, -5), (3, -3)$ .