

Horner's Method

INPUT degree n ; coefficients a_0, a_1, \dots, a_n ; x_0 .

OUTPUT $y = P(x_0)$; $z = P'(x_0)$.

STEP1 Set $y = a_n$;
Set $z = a_n$;

STEP2 For $j = n-1, n-2, \dots, 1$
Set $y = x_0 * y + a_j$; // compute b_j for P
Set $z = x_0 * z + y$.

STEP3 Set $y = x_0 * y + a_0$.

STEP4 OUTPUT(y, z);
STOP.