Extracted from: http://rosettacode.org/wiki/Horner's_rule_for_polynomial_evaluation:

Horner's rule for polynomial evaluation

From Rosetta Code

Horner's rule for polynomial evaluation
You are encouraged to solve this task according to the task description, using any language you may know.

A fast scheme for evaluating a polynomial such as:

$$-19 + 7x - 4x^2 + 6x^3$$

when

$$x = 3.$$

is to arrange the computation as follows:

$$((((0)x + 6)x + (-4))x + 7)x + (-19)$$

And compute the result from the innermost brackets outwards as in this pseudocode:

```
coefficients := [-19, 7, -4, 6] # list coefficients of all x^0..x^n in order
x := 3
accumulator := 0
for i in length(coefficients) downto 1 do
    # Assumes 1-based indexing for arrays
    accumulator := ( accumulator * x ) + coefficients[i]
done
# accumulator now has the answer
```