

MATH 305 Polynomials – Nested Form

Write the following polynomials in nested form.

1. Express the polynomial $f(x) = 3x^4 - 6x^6 - 2x^3 + 12x + x^7 + 5$, in nested form.

Answer: $f(x) = (((x - 6)x^2 + 3)x - 2)x^2 + 12)x + 5$

- (a) Use your calculator to evaluate the standard form at $x = 3$ and count all the key presses required to do so.
- (b) Use your calculator to evaluate the nested form at $x = 3$ and count all the key presses required to do so.

2. Apply Horner's method to the polynomial $f(x) = 8x^2 - 4x^5 + 2x^6 - 9 + x^8$.

Answer: $f(x) = (((x^2 + 2)x - 4)x^3 + 8)x^2 - 9$

- (a) Use your calculator to evaluate the standard form at $x = 3$ and count all the key presses required to do so.
- (b) Use your calculator to evaluate the nested form at $x = 3$ and count all the key presses required to do so.