

Name: _____

Polynomial Functions of Higher Degrees

Exercise 1: Determine the possible number of positive and negative real numbers for the polynomial functions:

1) $f(x) = 4x^5 + 3x^3 - 9x^2 - 11x + 9$

2) $f(x) = x^6 - 8x^5 + 7x^4 + 4x^3 - 12x^2 - 3x + 9$

Exercise 2: Use the Intermediate Value Theorem to show that each function has a zero in the given interval. Approximate the zero rounded to three decimal places.

1) $f(x) = x^3 - 3x + 1$; $[0,1]$

2) $f(x) = 2x^4 - x^3 - 6x + 3$; $[1,2]$

Exercise 3: Use Descartes Rule of signs to summarize the number of positive, and negative roots of each polynomial function.

1) $f(x) = x^6 + x^5 - 9x^3 + 22x - 3$

2) $f(x) = 6x^4 + 11x^3 - 6x^2 - 5x + 1$

3) $f(x) = -x^5 + 3x^4 + 2x^3 - 5x + 1$