MATH 1314
Chapter 3.4: Zeros Of Polynomial Functions

Find all zeros of $f(x) = x^3 + 2x^2 - 5x - 6$.

Rational Zeros Theorem:

$$f(x) = a_n x^n + a_{n-1} x^{n-1} + \ldots + a_2 x^2 + a_1 x + a_0$$

Factors of P = a_0

---------- ➔ Possible zeros of f(x)

Factors of Q = a_n

Find all zeros of $f(x) = x^3 + 2x^2 - 5x - 6$.

Find all zeros of $f(x) = x^3 + 7x^2 + 11x - 3$.

Find all zeros of $f(x) = x^4 - 6x^2 - 8x + 24$.

Fundamental Theorem Of Algebra:

A polynomial of degree N has a maximum of N real roots.

$f(x) = 0$ has at least one complex root $a + bi$.

Descartes' Rule Of Signs

Positive Real Zeros:
the number of sign changes N of $f(x)$ or N – Even Number

Negative Real Zeros:
the number of sign changes N of $f(-x)$ or N – Even Number

Find the number of possible positive and negative zeros of
$f(x) = 3x^7 - 2x^5 - x^4 + 7x^2 + x - 3$.

Find the number of possible positive and negative zeros of
$f(x) = x^3 + 2x^2 + 5x + 4$.