# Rational Root Theorem
# and
# Complex Conjugate Theorem

# Rational Root Theorem

- Used to find **POSSIBLE** rational roots (solutions) to a polynomial.
- Possible Roots: **P/Q**
- Where P represents the factors of the constant of the polynomial and Q represents the factors of the leading coefficient.

# Rational Root Theorem

$$f(x) = 2x^3 - 11x^2 + 12x + 9$$

$\pm 1, \pm 3, \pm 9$ factors of constant (P)

$\pm 1, \pm 2$ factors leading coeff (Q)

$\pm 1, \pm \frac{1}{2}, \pm 3, \pm \frac{3}{2}, \pm 9, \pm \frac{9}{2}$ Possible roots

Plug in the possible roots until one gives us an answ. of zero

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

Possible roots $\pm\frac{1}{1}, \pm\frac{1}{2}$

$\pm 1, \pm\frac{1}{2}$