

MHF 4UI
Unit 1 Polynomials
Day 3 - Factor Theorem (2.4)

2.4 Factor Theorem

A Polynomial $P(x)$ has $(ax - b)$ as a factor if, and only if (iff)

Example 1: Is $(2x - 5)$ a factor of $6x^3 - 2x - 15x^2 + 5$?

Example 2: Factor the following completely:

a) $x^3 + 8x^2 + 19x + 12$

b) $x^4 + 4x^3 - 7x^2 - 34x - 24$

Rational Zero Theorem (Trick for Finding Factors)

If $x = \frac{b}{a}$ is a zero of a polynomial $P(x)$ with integers as coefficients, then b is a factor of the constant term and a is a factor of the leading coefficient.

Ex. Factor $8x^3 - 4x^2 - 2x + 1$