Name:_____ Date:_____ Block:_____

SECTION 11-4 *Rational Roots*

Rational Root Theorem:

- ✓ What is a rational number? Given an example?

- ✓ What is a root of a polynomial?

- ✓ Example: What are the roots for $x^2 - 4 = 0$?

- ✓ Example: Find the possible rational roots for $4x^2 + 2x + 9 = 0$…

Let $P(x) = ax^2 + bx + c$ then the possible rational roots would be

Example: What are the possible rational roots for $x^2 - 4 = 0$? State which possible roots are roots for this polynomial.

EXAMPLES

1. $x^2 - 5x + 3 = 0$
2. $6x^2 + 2x - 8 = 0$
3. $4x^2 - 8x - 9 = 0$

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SECTION 11-4 *Rational Roots*

Rational Root Theorem (Continued)

- ✓ Example: What are the possible rational roots for $4x^3 + x^2 - x + 6 = 0$?

- ✓ Example: What are the possible rational roots for $5x^3 + 2x^2 - 3x + 12 = 0$?

This theorem works with other polynomials as well…

Let $P(x) = ax^n + bx^{n-1} + \cdots + yx + z$ then the possible rational roots would be

The purpose of this theorem is to…

do a quick check whether a polynomial has rational roots

Example: What are the possible rational roots for $4x^7 + x^5 - x^3 + 6 = 0$?

EXAMPLES

1. $9x^4 + x^3 - 5x + 6 = 0$
2. $6x^3 - x + 7 = 0$
3. $4x^5 + x^3 - x^2 + 1 = 0$