

Algebra III
Rational Zero Theorem

Name: _____
1/8/18

Warm-Up:

Factor completely $f(x) = x^3 - x^2 - x + 1$

Rational Zero Theorem

$$\text{Let } f(x) = qx^n + a_1x^{n-1} + \dots + a_nx + p$$

The list of possible rational zeros for $f(x)$ can be found by listing $\frac{\text{factors}(p)}{\text{factors}(q)}$.

Note: Not all zeros are rational!

Ex #1: List all possible rational zeros for $f(x) = x^3 + 7x^2 + 4x - 12$

You try: List all possible rational zeros for $f(x) = x^3 + 2x^2 - 8x - 16$

Ex #2: List all possible rational zeros for $f(x) = 4x^3 - 7x + 8$

Ex #3: Find all real zeros for $f(x) = x^3 + 2x^2 - 5x - 6$

You try: Find all real zeros for $f(x) = 4x^3 - 7x + 3$

Ex #5: Find all real zeros for $f(x) = 4x^3 + 8x^2 - 2x - 4$