

Honors Algebra II

Notes Section 2.6

Find Rational Zeros

Rational Zero Theorem: p/q

p : _____

q : _____

EXAMPLE 1 List the possible rational zeros.

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

Factors of the Constant Term: _____

Factors of the Leading Coefficient: _____

p/q : _____

b) $f(x) = 4x^4 - x^3 - 3x^2 + 9x - 10$

Factors of the Constant Term: _____

Factors of the Leading Coefficient: _____

p/q : _____

EXAMPLE 2 Find all real zeros.

a) $f(x) = x^3 - 8x^2 + 11x + 20$

Step 1 Find p and q

P: _____ q: _____

Step 2 Find p/q _____**Step 3** Use Synthetic Division until you find a zero that is REAL.

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Step 4 Factor to find the remaining zeros.

b) $g(x) = x^3 - 8x^2 + 5x + 14$

Step 1 Find p and q

P: _____

q: _____

Step 2 Find p/q _____

Step 3 Use Synthetic Division until you find a zero that is REAL.

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Step 4 Factor to find the remaining zeros.

EXAMPLE 3 Find all real zeros.

a) $f(x) = 48x^3 + 4x^2 - 20x + 3$

Step 1 Find p and q

p: _____ q: _____

Step 2 Find p/q _____

Step 3 Graph using a graphing calculator to pick a few "REASONABLE" values

Reasonable Values: _____

Step 4 Check a couple of "Reasonable" values using Synthetic Division

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Step 5 Repeat Steps 1-4 using Reduced Equation

Step 1 Find p and q

p: _____ q: _____

Step 2 Find p/q _____

Step 3 Graph using a graphing calculator to pick a few "REASONABLE" values

Reasonable Values: _____

Step 4 Check a couple of "Reasonable" values using Synthetic Division

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Step 6 Name all Real Zeros _____

b) $f(x) = 10x^4 - 11x^3 - 42x^2$

Step 1 Find p and q

p: _____ q: _____

Step 2 Find p/q _____

Step 3 Graph using a graphing calculator to pick a few "REASONABLE" values

Reasonable Values: _____

Step 4 Check a couple of "Reasonable" values using Synthetic Division

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Step 5 Repeat Steps 1-4 using Reduced Equation

Step 1 Find p and q

p: _____ q: _____

Step 2 Find p/q _____

Step 3 Graph using a graphing calculator to pick a few "REASONABLE" values

Reasonable Values: _____

Step 4 Check a couple of "Reasonable" values using Synthetic Division

Step 6 Reasonable value does NOT Factor after Synthetic Division
Use Quadratic Equation to find the remaining real zeros with reduced equation.

Step 7 Name all real zeros. _____

Step 4 Check a couple of "Reasonable" values using Synthetic Division