Rational Zeros January 08, 2018

8	Jame: /8/18	
Warm-Up:		
Factor completely $f(x) = x^3 - x^2 - x + 1 = (x + 1)(x + 1)(x + 1)$		
Only often for Zeros: +1		
_ ,	(xx1) (x-1)(x-1)	

Rational Zero Theorem

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 $\frac{factors(p)}{factors(q)}$.

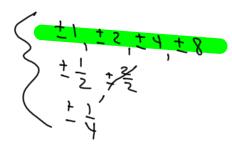
Note: Not all zeros are rational!

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

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

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



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

$$\frac{1}{-3} \frac{1}{3} \frac{1}{5} \frac{1$$

$$(x+3)(x-x-2)$$

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

$$2x^3 = \frac{\pm \frac{1}{3}}{\frac{1}{3}}, \pm \frac{1}{2}, \pm \frac{1}{4}, \pm \frac{3}{2}, \pm \frac{3}{4}$$

$$-\frac{21}{3}, \pm \frac{1}{2}, \pm \frac{1}{4}, \pm \frac{3}{2}, \pm \frac{3}{4}$$

$$-\frac{3}{4}$$

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