Number Systems

Rational Zeros Theorem

If P(x) is a polynomial with integer coefficients,

and if $\frac{p}{q}$ is a zero of P(x), i.e. $P\left(\frac{p}{q}\right)=0$

then p is a factor of the constant term of P(x)
and q is a factor of the leading coefficient of P(x).

Lesson 3.6_2 Ex.1

$x^4-2x^3-7x^2+8x+12$ vs

Lesson 4.1_1 Ex.2b

$(x+2)(10x^2-19x-15)=0$

New

$6x^3+41x^2-8x-7=0$

4.2 Solving Linear Inequalities

Math Learning Target:

"By the end of class, I can solve any linear inequality."

Recall:

$=$ $<$ $>$ $\leq$ $\geq$ $\neq$

Ex. 1: Consider the inequality $12 > 9$...

$12 > 9$ $12 > 9$ $12 > 9$ $12 > 9$ $12 > 9$

Rule:

Whenever you **multiply or divide an inequality** by a **negative** number, you **MUST reverse the inequality sign** to preserve the validity.

A **linear inequality** is an inequality that contains algebraic expression(s) that has (have) at most degree 1.

Ex. 2: Solve the linear inequality $\{x \in \mathbb{R}\}$.

$3x - 5 \leq 0$

Ex. 3: Solve $\{x \in \mathbb{R}\}$.

$$5 - 2x < -7 + x$$

Ex. 4: Solve $\{x \in \mathbb{R}\}$. Express your final answer in interval notation.

$$|x| \geq 4$$

Ex. 5: Solve $-7 \le 5(2x+3) - 4(x+1) \le 35$

a) $x \in \mathbb{R}$

b) $x \in W$

c) $x \in \mathbb{Z}$

Entertainment: pp. 213-215 #2bc, 4f, 6d, 7ef, 9*, 12, 15 Challenge: #19
*answers may vary for 9b)