

§1.8 Other Types of Inequalities

To Solve a Polynomial Inequality:

- 1.) Start in standard form with zero on the right of the inequality.
- 2.) Solve the corresponding polynomial equation. (critical numbers)
- 3.) Identify the intervals determined by the solutions of the equation.
- 4.) Use a sign graph to determine which intervals make the inequality true.

Example 1 Solve.

a.) $x^2 - x - 6 < 0$

b.) $2x^2 + 5x > 12$

Rational Inequalities:

- Note: – **NEVER** multiply both sides of an inequality by a variable expression!!
- You cannot lose the denominator in quotients.
 - Always remember the restriction that the denominator cannot be zero.

To Solve a Rational Inequality:

- 1) Start in a form with zero (0) on the right of the inequality. (Note you may need to simplify the inequality into a single fraction.)
- 2) Make a sign graph with intervals determined by the numbers that cause either the numerator or denominator of the rational expression to equal zero. (critical numbers)
- 3) Solutions are intervals which make the inequality true.

Example 2 Solve.

a.) $\frac{m-3}{m+5} \leq 0$

b.) $\frac{2x-7}{x-5} \leq 3$