10-3 Solving Rational Inequalities

Making a Sign Chart for a Rational Function

$$f(x) = \frac{(2x+1)}{(x+3)(x-1)}$$

Rational Inequalities

goal: to find where the graph is (+) or (-) depending on the inequality sign (remember to flip sign if multiply or divide by (-)

1. Get everything on one side and zero on the other
2. Find LCD
3. Simplify the "everything" side into 1 fraction (not clearing fractions)
4. Find x-intercepts - plot with open or closed holes depending on inequality signs
5. Find excluded values (VA) - plot with open holes on line or cross off undefined interval
6. Make a sign chart by testing points in each interval
7. Write answer in interval notation

Solve the rational inequalities

A) $\dfrac{x-5}{(2x-3)(x+2)} \geq 0$

B) $\dfrac{2x-1}{x-2} \geq 1$

C) $\dfrac{7-2x}{x+3} \leq -2$

Solve the rational inequalities

Never multiply both sides of an inequality by a variable!

D) $\frac{x-2}{x} < \frac{x-4}{x-6}$

E) $\frac{1}{x+2} > \frac{3}{x+1}$