Sec 5.5 Solving Rational Inequalities

When we solve rational equalities, we can simply rearrange to set one side to zero and multiply by the denominators to simplify.

Ex:

$$\frac{x+4}{x-3}=0$$
$$x+4=0(x-3)$$
$$x+4=0$$
$$x=-4$$

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However, to solve an inequality we can rearrange and set to zero, but we can't multiply through by the denominator because it is a inequality sign not an equality sign.

If t+8 is negative then multiplying through the inequality sign switches!!!!

This technique gives the incorrect answer because it loses some of the intervals. You can only use it if the Denominator will never be negative such as t represents time.

$$\frac{240}{t+8}>\frac{20t}{t+1}$$
$$(t+1)240>20t(t+8)$$

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$$\frac{240}{t+8} > \frac{20t}{t+1}$$

~~$(t+1)240 > 20t(t+8)$~~

This way ALWAYS works.

$$\frac{240}{t+8} - \frac{20t}{t+1} > 0$$

If there is a possibility of the denominator equaling a negative #, we MUST use the long way!!!!

Common Denominator - Table Format

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Determine the solution set for:

$$\frac{-t}{4t-1} \geq \frac{2}{t-9}$$

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Practice

p296 #1, 4ace(note answer to a) is -5<x<-4.5), 5ace,9

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