Section 1.6: Inequalities

Key Topics: inequalities, identity, methods of solving inequalities

Nonnegative Identity

x^2 ___ 0

for ___ real number x.

The following operations produce ________ inequalities:

1. Simplifying one or both ____ of an inequality by ________ like terms and ________ parentheses
2. Adding or subtracting the ____ expression _____ sides of the inequality

If C represents a real number, then the following inequalities are all equivalent.

Sign of C	Inequality	Sense	Example
	$A < B$	$<$	$3x < 12$
C ________	$A \cdot C < B \cdot C$	________	$\frac{1}{3}(3x)$ ___ $\frac{1}{3}(12)$
C ________	$\frac{A}{C} < \frac{B}{C}$	________	$\frac{3x}{3}$ ___ $\frac{12}{3}$
C ________	$A \cdot C > B \cdot C$	________	$-\frac{1}{3}(3x)$ ___ $-\frac{1}{3}(12)$
C ________	$\frac{A}{C} > \frac{B}{C}$	________	$\frac{3x}{-3}$ ___ $\frac{12}{-3}$

______ results apply when $<$ is replaced throughout with ___ of the symbols $\leq$, $>$, or $\geq$.

Using the Test-Point Method to Solve an Inequality

Step 1 ______________________________

Step 2 ______________________________

Step 3 ______________________________

Step 4 ______________________________

Step 5 ______________________________

Step 6 ______________________________

Solve the inequality.

$x^3 - 2x^2 - 15x > 0$

Solve the inequality.

$$\frac{x^2 - 3x - 18}{x^2 - 4} \le 0$$

Section 1.7: Equations and Inequalities Including Absolute Value

Key Topics: absolute value equations, absolute value inequalities

Solutions of $|u| = a, a \geq 0$

If $a \geq 0$ and u is an algebraic expression, then

$|u| =$ ___ is equivalent to $u = a$ or $u = -a$.

$|u| =$ _____ has ___solution when __________.

Rules for Solving Absolute Value Inequalities

If $a > 0$ and u is an algebraic expression, then

1. $|u| < a$ is equivalent to _____________, or u in ________.
2. $|u| \leq a$ is equivalent to _____________, or u in ________.
3. $|u| > a$ is equivalent to _________________, or u in ____________________.
4. $|u| \geq a$ is equivalent to _________________, or u in ____________________.

Work the Practice Problems in this section.