

Name:

Section 2.4
Intermediate Algebra
Digital Notes

Inequalities

Definition - An **inequality** will occur when

Notation

$>$ – is greater than

$<$ – is less than

Examples - True or False?

1. $5 > 3$

2. $-6 < 2$

3. $-3 > -1$

Definition - A **solution** is

Example - Determine whether $x = 5$ is a solution to the inequality $2x - 3 \leq 3x - 9$.

Now try 10, 14, 16, 18.. (More practice? 7, 9, 11, 13, 15, 19)

Example - Write the solution set in interval notation and graph it: $x \leq 1$

Example - $x > 5$

Now try 22, 24, 26. (More practice? 21, 23, 25)

Solving Inequalities

Process - Inequalities are solved in the same way as equations (with one major addition). The objective is to get 'x' by itself on one side of the inequality.

Important Rule: If you multiply or divide by a negative on both sides of the inequality, then you must flip the inequality symbol.

Example - Solve, graph, and express as an interval: $x + 3 < 5$

Example - $-3x \leq 12$

Example - $2x - 3 > 7$

Example - $18 \geq 3 - 5x$

Example - $3 - \frac{1}{4}x \geq 2$

Now try 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62. (More practice? 41, 45, 49, 53, 55, 59, 61)

Special Cases

Example - $x - 3 > x$

Example - $3(x + 2) \leq 9 + 3x$

Now try 64, 66, 70, 72. (More practice? 65, 69, 71)

Applications

Example - Tony is taller than 6 feet.

Example - Tina makes no more than \$8.20 per hour.

Example - Linda and Bob are shopping for a new truck in a city with a 9% sales tax. There is also an \$80 title and license fee to pay. They want to get a good truck and plan to spend at least \$10,000. What is the price range for the truck?

Now try 76, 80, 82, 84, 88, 90. (More practice? 77, 79, 81, 83, 87, 93)