This Chapter will be devoted to Inequalities, absolute values, sets, intersection/union of sets, interval & set notation.

This particular section will focus on solutions to inequalities in 2-D.

## Linear Inequalities

Def: An **inequality** is any sentence containing.

Def: A **solution** to an inequality is the value(s) of the unknown that makes the inequality true.

Def: The set of all solutions is called the **solution set**.

*Def:*  A ***linear inequality*** is a statement that describes how two numbers or linear expressions are related to one another. One form is .

If , then .

*a*

*b*

Ex: Find the solution to the following inequalities and express answer as a graph, in set notation, and in interval notation.

## Interval notation

Discuss ( vs [

Discuss def of open set, closed set, and non-open/closed set, and empty set.

Do we include [ or not include ( ?

Compare this notation to set builder notation.

Compare this notation to a graph.

## Properties of inequalities

Ex: Solve:

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*Properties for Inequalities*

Let *a*, *b*, and *c* be real numbers. Assume . Then

* If , then
* If c < 0, then
* If , then

Note: Whenever you multiply or divide by a neg. number you MUST flip the inequality! This is the only time!

* If , then

Ex: Solve the following inequalities:

1. (#36)
2. (#38)
3. (#42)

Ex: (#48) Let . Find all values of x for which .

Ex: (#70) Find the domain of the following function: