Elementary Inequality – Bất Đẳng Thức Sơ Cấp

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Tóm tắt nội dung

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Mục lục

1 Introduction to Inequality

Definition 1 (Inequality)**.** *"In mathematics, an* inequality *is a relation which makes a non-equal comparison between 2 numbers or other mathematical expressions.*

It is used most often to compare 2 numbers on the number line by the size. There are several different notations used to represent different kinds of inequalities: The notation $a < b$ means that a is *less than* b. The notation $a > b$ means that a is *greater than* b. In either case, a is not equal to b. These relations are known as *strict inequalities*, meaning that a is strictly less than or strictly greater than b. Equivalence is excluded.

In contrast to strict inequalities, there are 2 types of inequality relations that are not strict: The notation $a \leq b$ means that a is *less than or equal to* b (or, equivalently, at most b, or not greater than b). The notation $a \geq b$ means that a is *greater than or equal to* b (or, equivalently, at least b, or not less than b).

The relation *not great than* can also be represented by $a \ngtr b$, the symbol for "greater than" bisected by a slash, "not". The same is true for *not less than* & $a \nless b$.

The notation $a \neq b$ means that a is not equal to b; this *inequation* sometimes is considered a form of strict inequality. It does not say that one is greater than the other; it does not even require a, b to be member of an ordered set.

In engineering science, less formal use of the notation is to state that 1 quantity is "much greater" than another, normally by several orders of magnitude. The notation $a \ll b$ means that a is *much less than* b. The notation $a \gg b$ means that a is *much greater than* b. This implies that the lesser value can be neglected with little effect on the accuracy of an approximation (e.g., the case of ultrarelativistic limit in physics).

In all of the cases above, any 2 symbols mirroring each other are symmetrical; $a < b$ & $b > a$ are equivalent, etc." – Wikipedia/inequality (mathematics)

1.1 Properties on the number line $\mathbb{R}$

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