MATH 330; Introduction

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1 Notation

A number that belongs to the set of all real numbers, denoted as $\mathbb{R}$, is referred to as a **Scalar** or a *scalar value*.

- Scalar values are always denoted using lower-case letters, i.e., *j, s, t, a, m*
  - May also have subscripts which indicate that they are different numbers, i.e., k_1, k_2, k_3.

Notation for getting the sum of k_1 through k_3:

$$\sum_{i=1}^{3} k_i$$

$k \in \mathbb{R}$ means that k belongs to the set of all real numbers.

The aboslute value of scalar, k, is denoted $|k|$, and is defined as:

$$|k| = \begin{cases} k, & \text{if } k \geq 0, \\ -k, & \text{if } k < 0, \end{cases}$$

- If the number is *negative*, the minus sign is removed.

A **Set** is a small collection of, for example, integers. A set containing the numbers 1, 2, 5 is denoted as $\{1, 2, 5\}$.

- If it is desireable to have a variable, i, that can take on any number in the set, then it is denoted as: $i \in \{1, 2, 5\}$.

Real numbers can take on values in a certain *range*. For example:

- If x can take on any value from 0 to 1, inclusive: $x \in [0, 1]$
- Parentheses denotes exclusive end points:

$$x \in [-1, 2) \text{ denotes } -1 \leq x < 2$$

2 Trigonometry

SOHCAHTOA THROWBACK