Look at the following sets of numbers :

$$A = \{x \in \mathbb{R} \mid 2 < x < 5\}$$

$$B=\{x\in\mathbb{R}\mid 2\leq x\leq 5\}$$

$$C = \{x \in \mathbb{R} \mid 2 < x \le 5\}$$
 $D = \{x \in \mathbb{R} \mid 2 \le x < 5\}$

between 2 and 5 with the possible exceptions of 2 and/or 5. These sets are called intervals and the numbers 2 and 5 are the endpoints of each interval.

As intervals appear very often in mathematics,

it is common to use a shorthand notation to describe intervals. For example, the pervious intervals are denoted as : A = (2, 5) =]2, 5[B = [2, 5]

C = (2,5] =]2,5]

Let R be the family of all intervals of the real

Properties of the intervals

line. Include in R are: the empty set Ø and the points a = [a,a]. intervals, then, have the following properties:

1. The intersection of two intervals is an interval;

interval; that is, $A,B\in\mathbb{R}$ and $A\cap B
eq\emptyset\Rightarrow A\cup B\in\mathbb{R}.$

that is, $A, B \in \mathbb{R} \Rightarrow A \cap B \in \mathbb{R}$.

2. The union of two no disjoint intervals is an

- 3. The difference of two non comparable intervals is an interval; this is $A,B\in\mathbb{R}$ and A,B not comparables $\Rightarrow A-B\in\mathbb{R}$.
- Infinite intervals

$A = \{x \mid x > 1\}$

denoted as

The sets of them from

$$B = \{x \mid x \le 0\}$$

 $C = \{x \mid x \in \mathbb{R}\}$

 $A = (1, \infty)$

 $B=(-\infty,0)$

$$C = (-\infty, \infty)$$