Integrated Research Center of Kobe University

Sakaé Fuchino

The printer friendly version of the slides of the talk are uploaded at:

`http://fuchino.ddo.jp/slides/kobe-science-cafe-16-01-16-pf.pdf`

This handout is downloadable as:

`http://fuchino.ddo.jp/slides/handout-kobe-science-cafe-16-01-16.pdf`

Glossary

The counting numbers beginning with 0 (that is, 0, 1, 2, 3,...) are also called natural numbers. Sometimes 0 is omitted. Yhe *rational numbers* are numbers which can be represented as a fraction (for example numbers represented as $\frac{4}{3}$, $-\frac{4}{3} = \frac{-4}{3}$ are rational numbers. natural numbers are also rational numbers since $0 = \frac{0}{1}$, $1 = \frac{1}{1}$, $2 = \frac{2}{1}$, etc.). All numbers corresponding to the coordinates of points on a line are called *real numbers*. Rational numbers are included in real numbers. But, as we see in the talk, there are real numbers which are not rational.

A quotient $\frac{m}{n}$ is *reduced* if no reduction of the expression $\frac{m}{n}$ is possible. For example $\frac{30}{25}$ is not reduced since the reduction to $\frac{6}{5}$ is still possible. 6 and 5 do not have any common devisor and thus $\frac{6}{5}$ is reduced.

A mathematical statement is a *theorem* if it is proved to be true. A mathematical statement which is believed to be true but not yet proved is called a *conjecture* or *postulate*.

A mathematical proof is said to be *constructive* if it shows concretely how the mathematical objects mentioned in the claim to be proved should be constructed. If a proof logically demonstrates the existence of such objects but not give the exact way to obtain the objects it is said to be *non-constrictive*.

Abbreviations used frequently in mathematics

`iff:`   if and only if

`s.t.:`   such that

`w.r.t.:`   with respect to