Cheatography

Does R = Q in mathematics or what is R? Cheat Sheet

by RayWilliams via cheatography.com/97589/cs/20908/

Does R = Q in mathematics or what is R?

R and Q are different sets of numbers - IR is the set of real numbers , Q is the set of rational numbers .
Q contains all numbers that can be represented as a fraction of two integers. So about 5/2, 1/7, 12/89, etc. However, there are some numbers where this is not possible - for example, Pi. Pi is an irrational number (that is, it has infinitely many decimal places, the have no regularity as with periodic numbers).
R contains the rational numbers and the irrational numbers. These are basically all numbers that you learn at school. Of course, there are even larger numbers than R, but that's usually enough.

the equation

the equation

$$x^2 - 42 = 0$$

has no solution in Q, for example.
The solution would be:

$$x = \pm\sqrt{42}$$

rational number

The root of 42 is also a rational number, so it can not be represented as a fraction of two integers. This is the same for all roots whose radicand (the number below the root) is not a square.
Basically, R is just the next largest number after Q. It contains numbers that are not in Q (the irrational numbers) and is therefore the base set for most non-university mathematical calculations.

By **RayWilliams**

cheatography.com/raywilliams/

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