**Algebraic Number**

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An algebraic number is any number that is a root of a non-zero polynomial with [rational](http://www.mathsisfun.com/rational-numbers.html) [coefficients](http://www.mathsisfun.com/algebra/definitions.html).

**Put more simply**, when you have a polynomial like (for example):

**2x2 - 4x + 2 = 0**

Then **x** is algebraic.

Because:

* It is a non-zero polynomial
* **x** is a root (ie **x** gives the result of **zero** for the function 2x2 - 4x + 2)
* the coefficients (the numbers 2, 4 and 2) are rational numbers

The polynomial could, of course, be simpler or more complicated than this example, just so long as the coefficents are rational.

**Not Algebraic? Then Transcendental!**

If a number is not algebraic, it is called [transcendental](http://www.mathsisfun.com/numbers/transcendental-numbers.html).

**Example: is √2 (the square root of 2) algebraic or transcendental?**

√2 is the solution to x2 - 2 = 0, so is therefore algebraic

**Properties**

All algebraic numbers are computable and therefore definable.

The set of algebraic numbers is countable.

The imaginary number **i** is algebraic (it is the solution to x2 + 1 = 0).

All rational numbers are algebraic, but an [irrational](http://www.mathsisfun.com/irrational-numbers.html) number may or may not be algebraic.