

# Continued fraction

A *continued fraction* is a fraction of the form

$$a_1 + \frac{b_1}{a_2 + \frac{b_2}{a_3 + \frac{b_3}{a_4 + \dots}}}$$

A *simple* continued fraction is one in which every  $b_i$  is equal to 1, and every  $a_i$  is a positive integer (except that  $a_1$  may be any integer).

Every [rational number](#) can be written as a terminating simple continued fraction.

Some numbers can be written as recurring simple continued fractions, for example

$$\sqrt{5} = 2 + \frac{1}{4 + \frac{1}{4 + \frac{1}{4 + \dots}}}$$