= 1 if m is even . Thus the set of rational numbers q for which (? 1) q =
1 is dense in the rational numbers , as is the set of q for which (? 1) q = ? 1 . This means that the function (? 1) q is not continuous at any rational number q where it is defined .
On the other hand , arbitrary complex powers of negative numbers b can be defined by choosing a complex logarithm of b .

Irrational exponents

If a is a positive algebraic number , and b is a rational number , it has been shown above that ab is algebraic . This remains true even if one accepts any algebraic number for a , with the only difference that ab may take several values (see below) , all algebraic . Gelfond ? Schneider theorem provides some information on the nature of ab when b is irrational (that is not rational) . It states :
If a is an algebraic number different from 0 and 1 , and b an irrational algebraic number , then all the values of ab are transcendental numbers (that is , not algebraic) .

Complex exponents with positive real bases

Imaginary exponents with base e