

Specifications for Exponentiation  $x^y$   
over the Extended Reals  $X$  :

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EXPONENTIATION	$x^y$	with	$y = \text{integer } j$
	$j < 0$	$j = 0$	$j > 0$
$x \text{ in } X$	$(1/x)^{-j}$		$x^j$
$x \text{ is NaN}$	$x$	1	$x$

EXPONENTIATION	$x^y$	with $y \neq \text{integer}$		
	$y = -\infty$	$-\infty < y < 0$	$0 < y < +\infty$	$y = +\infty$
$x < -1$	$+0$			$+\infty$
$x = -1$		NaN *		
$-1 < x < 0$				
$x = 0$	$+\infty$	$+\infty$ *		$+0$
$0 < x < 1$				
$x = 1$	NaN *	$\exp(y \cdot \ln(x))$		
$1 < x < +\infty$				
$x = +\infty$	$+0$			$+\infty$
$x$ is NaN		$x$		

All entries in this table except  $(x < 0)^{\pm\infty}$ ,  $0^{y > 0}$  and  $0^{-\infty}$  are produced automatically, including the signals where marked by an \*, by the expression  $\exp(y \cdot \ln(x))$  provided it is evaluated in a way analogous to the specifications of the IEEE standards, and then the expression  $\exp(\text{NaN} \cdot \ln(x))$  quietly produces NaN for  $x^{\text{NaN}}$  too. In the previous table  $1/0$  signals DIVBZ.