## Syntax

Math	Eigen math	Comment
a = b	a == b	test for equality
-a	-a	negation
a + b	a+b	addition
a - b	a-b	subtraction
ab	a b	$multiplication, \ also \ {\tt a*b}$
$\frac{a}{b}$	a/b	division
$\frac{a}{bc}$	a/b/c	division is left-associative
$a^2$	a^2	power
$\sqrt{a}$	sqrt(a)	square root, also a^(1/2)
a(b+c)	a (b+c)	space is required
f(a)	f(a)	function
$\begin{pmatrix} a \\ b \\ c \end{pmatrix}$	(a,b,c)	vector
$\begin{pmatrix} a & b \\ c & d \end{pmatrix}$	((a,b),(c,d))	matrix
$F^1{}_2$	F[1,2]	tensor component access
	"hello, world"	string literal
$\pi$	pi	
e	exp(1)	natural number

Arithmetic operators have the expected precedence of multiplication and division before addition and subtraction. Subexpressions in parentheses have highest precedence.

Parentheses are required around negative exponents. For example,

instead of

## 10^-3

The reason for this is that the binding of the negative sign is not always obvious. For example, consider

## x^-1/2

It is not clear whether the exponent should be -1 or -1/2. Hence the following syntax is required.

$$x^{(-1/2)}$$

In general, parentheses are always required when the exponent is an expression. For example,  $x^1/2$  is evaluated as  $(x^1)/2$  which is probably not the desired result.

x^1/2

 $\frac{1}{2}x$ 

Using  $x^{(1/2)}$  yields the desired result.

 $x^{(1/2)}$ 

 $x^{1/2}$