

op_arith — Arithmetic operators

Syntax Diagnostics	Description Also see	Remarks and examples	Conformability
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Syntax

$a + b$	addition
$a - b$	subtraction
$a * b$	multiplication
a / b	division
$a \wedge b$	power
$-a$	negation

where a and b may be numeric scalars, vectors, or matrices.

Description

The above operators perform basic arithmetic.

Remarks and examples

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Also see [M-2] [op_colon](#) for the `:+`, `:-`, `:*`, and `:/` operators. Colon operators have relaxed conformability restrictions.

The `*` and `:*` multiplication operators can also perform string duplication—`3*"a" = "aaa"`—see [M-5] [strdup\(\)](#).

Conformability

$a + b, a - b:$

$a:$	$r \times c$
$b:$	$r \times c$
<i>result:</i>	$r \times c$

$a * b:$

$a:$	$k \times n$	$k \times n$	1×1
$b:$	$n \times m$	1×1	$n \times m$
<i>result:</i>	$k \times m$	$k \times n$	$n \times m$

$a / b:$

$a:$	$r \times c$
$b:$	1×1
<i>result:</i>	$r \times c$

$a \wedge b:$

$a:$	1×1
$b:$	1×1
<i>result:</i>	1×1

$-a$:

<i>a</i> :	$r \times c$
<i>result</i> :	$r \times c$

Diagnostics

All operators return missing when arguments are missing.

$a*b$ with a : $k \times 0$ and b : $0 \times m$ returns a $k \times m$ matrix of zeros.

a/b returns missing when $b==0$ or when a/b would result in overflow.

a^b returns a real when both a and b are real; thus, $(-4)^.5$ evaluates to missing, whereas $(-4+0i)^.5$ evaluates to $2i$.

a^b returns missing on overflow.

Also see

[M-2] [exp](#) — Expressions

[M-2] [intro](#) — Language definition