NAME

atan2, atan2f, atan2l − arc tangent function of two variables

SYNOPSIS

#include <math.h>

double atan2(double *y*, **double** *x*);
float atan2f(float *y*, **float** *x*);
long double atan2l(long double *y*, **long double** *x*);

Link with *−lm*.

Feature Test Macro Requirements for glibc (see **feature_test_macros**(7)):

atan2f(), **atan2l**():
_ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L
|| /* Since glibc 2.19: */ _DEFAULT_SOURCE
|| /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE

DESCRIPTION

These functions calculate the principal value of the arc tangent of *y/x*, using the signs of the two arguments to determine the quadrant of the result.

RETURN VALUE

On success, these functions return the principal value of the arc tangent of *y/x* in radians; the return value is in the range [−pi, pi].

If *y* is +0 (−0) and *x* is less than 0, +pi (−pi) is returned.

If *y* is +0 (−0) and *x* is greater than 0, +0 (−0) is returned.

If *y* is less than 0 and *x* is +0 or −0, −pi/2 is returned.

If *y* is greater than 0 and *x* is +0 or −0, pi/2 is returned.

If either *x* or *y* is NaN, a NaN is returned.

If *y* is +0 (−0) and *x* is −0, +pi (−pi) is returned.

If *y* is +0 (−0) and *x* is +0, +0 (−0) is returned.

If *y* is a finite value greater (less) than 0, and *x* is negative infinity, +pi (−pi) is returned.

If *y* is a finite value greater (less) than 0, and *x* is positive infinity, +0 (−0) is returned.

If *y* is positive infinity (negative infinity), and *x* is finite, pi/2 (−pi/2) is returned.

If *y* is positive infinity (negative infinity) and *x* is negative infinity, +3*pi/4 (−3*pi/4) is returned.

If *y* is positive infinity (negative infinity) and *x* is positive infinity, +pi/4 (−pi/4) is returned.

ERRORS

No errors occur.

ATTRIBUTES

For an explanation of the terms used in this section, see **attributes**(7).

Interface	Attribute	Value
atan2(), **atan2f**(), **atan2l**()	Thread safety	MT-Safe

CONFORMING TO

C99, POSIX.1-2001, POSIX.1-2008.

The variant returning *double* also conforms to SVr4, 4.3BSD, C89.

SEE ALSO

acos(3), **asin**(3), **atan**(3), **carg**(3), **cos**(3), **sin**(3), **tan**(3)

COLOPHON

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