

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():
```

```
    _BSD_SOURCE || _SVID_SOURCE || _XOPEN_SOURCE >= 600 || _ISOC99_SOURCE  
    || _POSIX_C_SOURCE >= 200112L;  
    or cc -std=c99
```

DESCRIPTION

The **atan2()** function calculates 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.

CONFORMING TO

C99, POSIX.1-2001. 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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