

The **math.h** header defines various mathematical functions and one macro. All the functions available in this library take **double** as an argument and return **double** as the result.

## Library Macros

There is only one macro defined in this library –

| S.N. | Macro & Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | <b>HUGE_VAL</b><br><br>This macro is used when the result of a function may not be representable as a floating point number. If magnitude of the correct result is too large to be represented, the function sets errno to ERANGE to indicate a range error, and returns a particular, very large value named by the macro HUGE_VAL or its negation $-HUGE\_VAL$ .<br><br>If the magnitude of the result is too small, a value of zero is returned instead. In this case, errno might or might not be set to ERANGE. |

## Library Functions

Following are the functions defined in the header math.h –

| S.N. | Function & Description                                                                                                                                                    |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | <a href="#"><u>double acosdoublex</u></a><br><br>Returns the arc cosine of x in radians.                                                                                  |
| 2    | <a href="#"><u>double asindoublex</u></a><br><br>Returns the arc sine of x in radians.                                                                                    |
| 3    | <a href="#"><u>double atandoublex</u></a><br><br>Returns the arc tangent of x in radians.                                                                                 |
| 4    | <a href="#"><u>double atan2doublyy, doublex</u></a><br><br>Returns the arc tangent in radians of y/x based on the signs of both values to determine the correct quadrant. |
| 5    | <a href="#"><u>double cosdoublex</u></a><br><br>Returns the cosine of a radian angle x.                                                                                   |
| 6    | <a href="#"><u>double coshdoublex</u></a>                                                                                                                                 |

Returns the hyperbolic cosine of  $x$ .

7

[double sindoublex](#)

Returns the sine of a radian angle  $x$ .

8

[double sinhdoublex](#)

Returns the hyperbolic sine of  $x$ .

9

[double tanhdoublex](#)

Returns the hyperbolic tangent of  $x$ .

10

[double expdoublex](#)

Returns the value of  $e$  raised to the  $x$ th power.

11

[double frexpdoublex, int \\* exponent](#)

The returned value is the mantissa and the integer pointed to by *exponent* is the exponent. The resultant value is  $x = \text{mantissa} * 2^{\text{exponent}}$ .

12

[double ldexpdoublex, int exponent](#)

Returns  $x$  multiplied by 2 raised to the power of *exponent*.

13

[double logdoublex](#)

Returns the natural logarithm *base – e* logarithm of  $x$ .

14

[double log10doublex](#)

Returns the common logarithm *base – 10* logarithm of  $x$ .

15

[double modfdoublex, double \\* integer](#)

The returned value is the fraction component *part after the decimal*, and sets *integer* to the integer component.

16

[double powdoublex, double y](#)

Returns  $x$  raised to the power of  $y$ .

17

[double sqrtdoublex](#)

Returns the square root of  $x$ .

18

[double ceil](#)*double x*

Returns the smallest integer value greater than or equal to **x**.

19

[double fabs](#)*double x*

Returns the absolute value of **x**.

20

[double floor](#)*double x*

Returns the largest integer value less than or equal to **x**.

21

[double fmod](#)*double x, double y*

Returns the remainder of **x** divided by **y**.