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 Functions

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

|  |  |
| --- | --- |
| **Sr.No.** | **Function & Description** |
| 1 | [**double acos(double x)**](https://www.tutorialspoint.com/c_standard_library/c_function_acos.htm)  Returns the arc cosine of x in radians. |
| 2 | [**double asin(double x)**](https://www.tutorialspoint.com/c_standard_library/c_function_asin.htm)  Returns the arc sine of x in radians. |
| 3 | [**double atan(double x)**](https://www.tutorialspoint.com/c_standard_library/c_function_atan.htm)  Returns the arc tangent of x in radians. |
| 4 | [**double atan2(double y, double x)**](https://www.tutorialspoint.com/c_standard_library/c_function_atan2.htm)  Returns the arc tangent in radians of y/x based on the signs of both values to determine the correct quadrant. |
| 5 | [**double cos(double x)**](https://www.tutorialspoint.com/c_standard_library/c_function_cos.htm)  Returns the cosine of a radian angle x. |
| 6 | [**double cosh(double x)**](https://www.tutorialspoint.com/c_standard_library/c_function_cosh.htm)  Returns the hyperbolic cosine of x. |
| 7 | [**double sin(double x)**](https://www.tutorialspoint.com/c_standard_library/c_function_sin.htm)  Returns the sine of a radian angle x. |
| 8 | [**double sinh(double x)**](https://www.tutorialspoint.com/c_standard_library/c_function_sinh.htm)  Returns the hyperbolic sine of x. |
| 9 | [**double tanh(double x)**](https://www.tutorialspoint.com/c_standard_library/c_function_tanh.htm)  Returns the hyperbolic tangent of x. |
| 10 | [**double exp(double x)**](https://www.tutorialspoint.com/c_standard_library/c_function_exp.htm)  Returns the value of **e** raised to the xth power. |
| 11 | [**double frexp(double x, int \*exponent)**](https://www.tutorialspoint.com/c_standard_library/c_function_frexp.htm)  The returned value is the mantissa and the integer pointed to by exponent is the exponent. The resultant value is x = mantissa \* 2 ^ exponent. |
| 12 | [**double ldexp(double x, int exponent)**](https://www.tutorialspoint.com/c_standard_library/c_function_ldexp.htm)  Returns **x** multiplied by 2 raised to the power of exponent. |
| 13 | [**double log(double x)**](https://www.tutorialspoint.com/c_standard_library/c_function_log.htm)  Returns the natural logarithm (base-e logarithm) of **x**. |
| 14 | [**double log10(double x)**](https://www.tutorialspoint.com/c_standard_library/c_function_log10.htm)  Returns the common logarithm (base-10 logarithm) of **x**. |
| 15 | [**double modf(double x, double \*integer)**](https://www.tutorialspoint.com/c_standard_library/c_function_modf.htm)  The returned value is the fraction component (part after the decimal), and sets integer to the integer component. |
| 16 | [**double pow(double x, double y)**](https://www.tutorialspoint.com/c_standard_library/c_function_pow.htm)  Returns x raised to the power of **y**. |
| 17 | [**double sqrt(double x)**](https://www.tutorialspoint.com/c_standard_library/c_function_sqrt.htm)  Returns the square root of **x**. |
| 18 | [**double ceil(double x)**](https://www.tutorialspoint.com/c_standard_library/c_function_ceil.htm)  Returns the smallest integer value greater than or equal to **x**. |
| 19 | [**double fabs(double x)**](https://www.tutorialspoint.com/c_standard_library/c_function_fabs.htm)  Returns the absolute value of **x**. |
| 20 | [**double floor(double x)**](https://www.tutorialspoint.com/c_standard_library/c_function_floor.htm)  Returns the largest integer value less than or equal to **x**. |
| 21 | [**double fmod(double x, double y)**](https://www.tutorialspoint.com/c_standard_library/c_function_fmod.htm)  Returns the remainder of x divided by **y**. |

header

**<cmath> (math.h)**

**C numerics library**

Header <cmath> declares a set of functions to compute common mathematical operations and transformations:

**Functions**

**Trigonometric functions**

[**cos**](http://www.cplusplus.com/reference/cmath/cos/)

Compute cosine (function )

[**sin**](http://www.cplusplus.com/reference/cmath/sin/)

Compute sine (function )

[**tan**](http://www.cplusplus.com/reference/cmath/tan/)

Compute tangent (function )

[**acos**](http://www.cplusplus.com/reference/cmath/acos/)

Compute arc cosine (function )

[**asin**](http://www.cplusplus.com/reference/cmath/asin/)

Compute arc sine (function )

[**atan**](http://www.cplusplus.com/reference/cmath/atan/)

Compute arc tangent (function )

[**atan2**](http://www.cplusplus.com/reference/cmath/atan2/)

Compute arc tangent with two parameters (function )

**Hyperbolic functions**

[**cosh**](http://www.cplusplus.com/reference/cmath/cosh/)

Compute hyperbolic cosine (function )

[**sinh**](http://www.cplusplus.com/reference/cmath/sinh/)

Compute hyperbolic sine (function )

[**tanh**](http://www.cplusplus.com/reference/cmath/tanh/)

Compute hyperbolic tangent (function )

[**acosh**](http://www.cplusplus.com/reference/cmath/acosh/)

Compute area hyperbolic cosine (function )

[**asinh**](http://www.cplusplus.com/reference/cmath/asinh/)

Compute area hyperbolic sine (function )

[**atanh**](http://www.cplusplus.com/reference/cmath/atanh/)

Compute area hyperbolic tangent (function )

**Exponential and logarithmic functions**

[**exp**](http://www.cplusplus.com/reference/cmath/exp/)

Compute exponential function (function )

[**frexp**](http://www.cplusplus.com/reference/cmath/frexp/)

Get significand and exponent (function )

[**ldexp**](http://www.cplusplus.com/reference/cmath/ldexp/)

Generate value from significand and exponent (function )

[**log**](http://www.cplusplus.com/reference/cmath/log/)

Compute natural logarithm (function )

[**log10**](http://www.cplusplus.com/reference/cmath/log10/)

Compute common logarithm (function )

[**modf**](http://www.cplusplus.com/reference/cmath/modf/)

Break into fractional and integral parts (function )

[**exp2**](http://www.cplusplus.com/reference/cmath/exp2/)

Compute binary exponential function (function )

[**expm1**](http://www.cplusplus.com/reference/cmath/expm1/)

Compute exponential minus one (function )

[**ilogb**](http://www.cplusplus.com/reference/cmath/ilogb/)

Integer binary logarithm (function )

[**log1p**](http://www.cplusplus.com/reference/cmath/log1p/)

Compute logarithm plus one (function )

[**log2**](http://www.cplusplus.com/reference/cmath/log2/)

Compute binary logarithm (function )

[**logb**](http://www.cplusplus.com/reference/cmath/logb/)

Compute floating-point base logarithm (function )

[**scalbn**](http://www.cplusplus.com/reference/cmath/scalbn/)

Scale significand using floating-point base exponent (function )

[**scalbln**](http://www.cplusplus.com/reference/cmath/scalbln/)

Scale significand using floating-point base exponent (long) (function )

**Power functions**

[**pow**](http://www.cplusplus.com/reference/cmath/pow/)

Raise to power (function )

[**sqrt**](http://www.cplusplus.com/reference/cmath/sqrt/)

Compute square root (function )

[**cbrt**](http://www.cplusplus.com/reference/cmath/cbrt/)

Compute cubic root (function )

[**hypot**](http://www.cplusplus.com/reference/cmath/hypot/)

Compute hypotenuse (function )

unction )

**Rounding and remainder functions**

[**ceil**](http://www.cplusplus.com/reference/cmath/ceil/)

Round up value (function )

[**floor**](http://www.cplusplus.com/reference/cmath/floor/)

Round down value (function )

[**fmod**](http://www.cplusplus.com/reference/cmath/fmod/)

Compute remainder of division (function )

[**trunc**](http://www.cplusplus.com/reference/cmath/trunc/)

Truncate value (function )

[**round**](http://www.cplusplus.com/reference/cmath/round/)

Round to nearest (function )

[**lround**](http://www.cplusplus.com/reference/cmath/lround/)

Round to nearest and cast to long integer (function )

[**llround**](http://www.cplusplus.com/reference/cmath/llround/)

Round to nearest and cast to long long integer (function )

[**rint**](http://www.cplusplus.com/reference/cmath/rint/)

Round to integral value (function )

[**lrint**](http://www.cplusplus.com/reference/cmath/lrint/)

Round and cast to long integer (function )

[**llrint**](http://www.cplusplus.com/reference/cmath/llrint/)

Round and cast to long long integer (function )

[**nearbyint**](http://www.cplusplus.com/reference/cmath/nearbyint/)

Round to nearby integral value (function )

[**remainder**](http://www.cplusplus.com/reference/cmath/remainder/)

Compute remainder (IEC 60559) (function )

[**remquo**](http://www.cplusplus.com/reference/cmath/remquo/)

Compute remainder and quotient (function )

**Other functions**

[**fabs**](http://www.cplusplus.com/reference/cmath/fabs/)

Compute absolute value (function )

[**abs**](http://www.cplusplus.com/reference/cmath/abs/)

Compute absolute value (function )