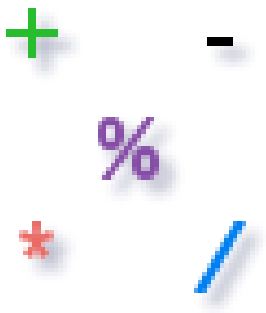
Math

There are several functions that cater to math in C++. This page will list some important math functions with an example and their respective include directive.



No include directive required:

Addition **+** | Subtraction **-** | Multiplication *****
Division **/** | Modulo **%** | Negative **-**
Order of operations apply in c++!

```
int x = (5 + 3 - (-1 * 8)) / 2;   //Result = 8
int remainder = 17 % 4;           //Result = 1
```

#include <cstdlib>

Integer Absolute Value **abs()** | Long Absolute Value **labs()**
(Long) Division Quotient and Remainder **ldiv()** **div()**

```
int x = abs(-852);                                    //Result = 852
div_t divVariable = div(38,5);
cout << divVariable.quot << ' ' << divVariable.rem;   //Result = 7 3
```

#include <cmath>

Float Absolute Value **fabs()** | e Exponent **exp()** | 2 Exponent **exp2()**
Base e Log **log()** | Base 10 Log **log10()** | Base 2 Log **log2()**
Base Exponent **pow()** | Square Root **sqrt()** | Cubed Root **cbrt()**
Round **round()** | Ceiling Nearest Greater Integer **ceil()**
Floor Nearest Lower Integer **floor()** | Hypotenuse **hypot()**
(Radians) Sin, Cos, Tan **sin()** **cos()** **tan()**
(Radians) ArcSin, ArcCos, ArcTan **asin()** **acos()** **atan()**

```
float x = fabs(-1.985);           //Result = 1.985
double eExp = exp(3);             //Result = 20.08553692 e^3
double expBase2 = exp2(4);        //Result = 16  2^4
double logBasee = log(32);        //Result = 3.465735903
double logBase10 = log10(100);    //Result = 2
double logBase2 = log2(64);       //Result = 6
double power = pow(3,4);          //Result = 81 pow(BASE,EXPONENT)
double squareRoot = sqrt(625);    //Result = 25
double cubedRoot = cbrt(64);      //Result = 4
double roundNum = round(2.564);   //Result = 3
double ceiling = ceil(-5.4);      //Result = -5
double floorNum = floor(9.8);     //Result = 9
double hypotenuse = hypot(3,4);   //Result = 5 hypot(OPP,ADJ)
double sinValue = sin(pi/6);      //Result = 0.5
const double pi = acos(-1);       //Result = pi (Use this for pi)
```