mathfunctions

Trigonometric Functions

Function	*Description*
`sin(radians)`	Returns the trigonometric sine of an angle in radians.
`cos(radians)`	Returns the trigonometric cosine of an angle in radians
`tan(radians)`	Returns the trigonometric tangent of an angle in radians.
`asin(a)`	Returns the angle in radians for the inverse of sine.
`acos(a)`	Returns the angle in radians for the inverse of cosine.
`atan(a)`	Returns the angle in radians for the inverse of tangent.

```
sin(0) returns 0.0
sin(270 * PI / 180) returns -1.0
sin(PI / 6) returns 0.5
sin(PI / 2) returns 1.0
cos(0) returns 1.0
cos(PI / 6) returns 0.866
cos(PI / 2) returns 0
asin(0.5) returns 0.523599  (same as π/6)
acos(0.5) returns 1.0472  (same as π/3)
atan(1.0) returns 0.785398  (same as π/4)
```

Exponent Function

Function	*Description*
`exp(x)`	Returns e raised to power of x (e^x).
`log(x)`	Returns the natural logarithm of x ($\ln(x) = \log_e(x)$).
`log10(x)`	Returns the base 10 logarithm of x ($\log_{10}(x)$).
`pow(a, b)`	Returns a raised to the power of b (a^b).
`sqrt(x)`	Returns the square root of x ($\sqrt{x}$) for x >= 0.

exp(1.0) returns 2.71828
log(E) returns 1.0
log10(10.0) returns 1.0
pow(2.0, 3) returns 8.0
sqrt(4.0) returns 2.0
sqrt(10.5) returns 3.24

Rounding Functions

- ceil(x) x is rounded up to its nearest integer. This integer is returned as a double value.
- floor(x) x is rounded down to its nearest integer. This integer is returned as a double value

ceil(2.1) returns 3.0
ceil(2.0) returns 2.0
ceil(-2.0) returns -2.0
ceil(-2.1) returns -2.0
floor(2.1) returns 2.0
floor(2.0) returns 2.0
floor(-2.0) returns –2.0
floor(-2.1) returns -3.0

The min, max, and abs Functions

- The min and max functions return the minimum and maximum numbers of two numbers (int,long, float, or double).
- For example, max(4.4, 5.0) returns 5.0, and min(3, 2) returns 2.
- The abs function returns the absolute value of the number (int, long, float, or double).
- Headerfile required: cstdlib

`max(2, 3)` returns `3`
`max(2.5, 3.0)` returns `3.0`
`min(2.5, 4.6)` returns `2.5`
`abs(-2)` returns `2`
`abs(-2.1)` returns `2.1`

Character Functions

- isalnum(int c): Checks if the character is alphanumeric (i.e., a letter or a digit).
- isalpha(int c): Checks if the character is an alphabetic letter.
- iscntrl(int c): Checks if the character is a control character.
- isdigit(int c): Checks if the character is a digit.

- isgraph(int c): Checks if the character has a graphical representation.
- islower(int c): Checks if the character is a lowercase letter.
- isprint(int c): Checks if the character is a printable character.
- ispunct(int c): Checks if the character is a punctuation character.
- isspace(int c): Checks if the character is a whitespace character.
- isupper(int c): Checks if the character is an uppercase letter.
- isxdigit(int c): Checks if the character is a hexadecimal digit.

manipulators

Operator	*Description*
`setprecision(n)`	sets the precision of a floating-point number
`fixed`	displays floating-point numbers in fixed-point notation
`showpoint`	causes a floating-point number to be displayed with a decimal point with trailing zeros even if it has no fractional part
`setw(width)`	specifies the width of a print field
`left`	justifies the output to the left
`right`	justifies the output to the right