Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math SQRT2 Property</title>
   </head>

   <body>
      <script type = "text/javascript">
         var property_value = Math.SQRT2
         document.write("Property Value is : " + property_value);
      </script>
   </body>
</html>
```

Output

```
Property Value is : 1.4142135623730951
```

JavaScript - Math SQRT2 Property

Previous Page Next Page

Description

It returns the square root of 2 which is approximately 1.414.

Syntax

Its syntax is as follows −

```
Math.SQRT2
```

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math SQRT2 Property</title>
   </head>

   <body>
      <script type = "text/javascript">
         var property_value = Math.SQRT2
         document.write("Property Value is : " + property_value);
      </script>
   </body>
</html>
```

Output

```
Property Value is : 1.4142135623730951
```

Math Methods

Here is a list of the methods associated with Math object and their description

Sr.No.	Method & Description
1	**abs()** Returns the absolute value of a number.
2	**acos()** Returns the arccosine (in radians) of a number.
3	**asin()** Returns the arcsine (in radians) of a number.
4	**atan()** Returns the arctangent (in radians) of a number.
5	**atan2()** Returns the arctangent of the quotient of its arguments.
6	**ceil()** Returns the smallest integer greater than or equal to a number.

7	**cos()** Returns the cosine of a number.
8	**exp()** Returns E^N, where N is the argument, and E is Euler's constant, the base of the natural logarithm.
9	**floor()** Returns the largest integer less than or equal to a number.
10	**log()** Returns the natural logarithm (base E) of a number.
11	**max()** Returns the largest of zero or more numbers.
12	**min()** Returns the smallest of zero or more numbers.
13	**pow()** Returns base to the exponent power, that is, base exponent.

14	**random()** Returns a pseudo-random number between 0 and 1.
15	**round()** Returns the value of a number rounded to the nearest integer.
16	**sin()** Returns the sine of a number.
17	**sqrt()** Returns the square root of a number.
18	**tan()** Returns the tangent of a number.
19	**toSource()** Returns the string "Math".

JavaScript - Math abs Method

Previous Page Next Page

Description

This method returns the absolute value of a number.

Syntax

Its syntax is as follows −

```
Math.abs( x ) ;
```

Parameter Details

x − A number.

Return Value

Returns the absolute value of a number.

Return Value

Returns the absolute value of a number.

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math abs() Method</title>
   </head>

   <body>
      <script type = "text/javascript">
         var value = Math.abs(-1);
         document.write("First Test Value : " + value );

         var value = Math.abs(null);
         document.write("<br />Second Test Value : " + value );

         var value = Math.abs(20);
         document.write("<br />Third Test Value : " + value );

         var value = Math.abs("string");
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

```
First Test Value : 1
Second Test Value : 0
Third Test Value : 20
Fourth Test Value : NaN
```

JavaScript - Math acos Method

Previous Page Next Page

Description

This method returns the arccosine in radians of a number. The acos method returns a numeric value between 0 and pi radians for x between -1 and 1. If the value of number is outside this range, it returns NaN.

Syntax

Its syntax is as follows −

```
Math.acos( x ) ;
```

Parameter Details

x − A number.

Return Value

Returns the arccosine in radians of a number.

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math acos() Method</title>
   </head>

   <body>
      <script type = "text/javascript">
         var value = Math.acos(-1);
         document.write("First Test Value : " + value );

         var value = Math.acos(null);
         document.write("<br />Second Test Value : " + value );

         var value = Math.acos(30);
         document.write("<br />Third Test Value : " + value );

         var value = Math.acos("string");
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

```
First Test Value : 3.141592653589793

Second Test Value : 1.5707963267948966

Third Test Value : NaN

Fourth Test Value : NaN
```

JavaScript - Math asin Method

Previous Page Next Page

Description

This method returns the arcsine in radians of a number. The asin method returns a numeric value between -pi/2 and pi/2 radians for x between -1 and 1. If the value of number is outside this range, it returns NaN.

Syntax

Its syntax is as follows −

```
Math.asin( x ) ;
```

Parameter Details

x − A number.

Return Value

Returns the arcsine in radians of a number.

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math asin() Method</title>
   </head>

   <body>
      <script type = "text/javascript">
         var value = Math.asin(-1);
         document.write("First Test Value : " + value );

         var value = Math.asin(null);
         document.write("<br />Second Test Value : " + value );

         var value = Math.asin(30);
         document.write("<br />Third Test Value : " + value );

         var value = Math.asin("string");
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

```
First Test Value : -1.5707963267948966

Second Test Value : 0

Third Test Value : NaN

Fourth Test Value : NaN
```

JavaScript Math - atan Method

Previous Page Next Page

Description

This method returns the arctangent in radians of a number. The atan method returns a numeric value between -pi/2 and pi/2 radians.

Syntax

Its syntax is as follows −

```
Math.atan( x ) ;
```

Parameter Details

x − A number.

Return Value

Returns the arctangent in radians of a number.

Example

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math atan() Method</title>
   </head>

   <body>
      <script type = "text/javascript">
         var value = Math.atan(-1);
         document.write("First Test Value : " + value );

         var value = Math.atan(.5);
         document.write("<br />Second Test Value : " + value );

         value = Math.atan(30);
         document.write("<br />Third Test Value : " + value );

         var value = Math.atan("string");
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

```
First Test Value : -0.7853981633974483

Second Test Value : 0.4636476090008061

Third Test Value : 1.5374753309166493

Fourth Test Value : NaN
```

JavaScript - Math ceil Method

Previous Page Next Page

Description

This method returns the smallest integer greater than or equal to a number.

Syntax

Its syntax is as follows −

```
Math.ceil( x ) ;
```

Parameter Details

x − A numbers.

Return Value

Returns the smallest integer greater than or equal to a number.

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math ceil() Method</title>
   </head>

   <body>
      <script type = "text/javascript">
         var value = Math.ceil(45.95);
         document.write("First Test Value : " + value );

         var value = Math.ceil(45.20);
         document.write("<br />Second Test Value : " + value );

         var value = Math.ceil(-45.95);
         document.write("<br />Third Test Value : " + value );

         var value = Math.ceil(-45.20);
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

```
First Test Value : 46

Second Test Value : 46

Third Test Value : -45

Fourth Test Value : -45
```

JavaScript - Math cos Method

Previous Page Next Page

Description

This method returns the cosine of a number. The cos method returns a numeric value between -1 and 1, which represents the cosine of the angle.

Syntax

Its syntax is as follows −

```
Math.cos( x ) ;
```

Parameter Details

x − A numbers.

Return Value

Returns the cosine of a number.

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math cos() Method</title>
   </head>

   <body>
      <script type = "text/javascript">
         var value = Math.cos(90);
         document.write("First Test Value : " + value );

         var value = Math.cos(30);
         document.write("<br />Second Test Value : " + value );

         var value = Math.cos(-1);
         document.write("<br />Third Test Value : " + value );

         var value = Math.cos(2*Math.PI);
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

```
First Test Value : -0.4480736161291702
Second Test Value : 0.15425144988758405
Third Test Value : 0.5403023058681398
Fourth Test Value : 1
```

JavaScript - Math exp Method

Previous Page Next Page

Description

This method returns E^x, where **x** is the argument, and **E** is Euler's constant, the base of the natural logarithms.

Syntax

Its syntax is as follows −

```
Math.exp( x ) ;
```

Parameter Details

x − A numbers.

Return Value

Returns the exponential value of the variable x.

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math exp() Method</title>
   </head>

   <body>
      <script type = "text/javascript">
         var value = Math.exp(1);
         document.write("First Test Value : " + value );

         var value = Math.exp(30);
         document.write("<br />Second Test Value : " + value );

         var value = Math.exp(-1);
         document.write("<br />Third Test Value : " + value );

         var value = Math.exp(.5);
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

```
First Test Value : 2.718281828459045

Second Test Value : 10686474581524.482

Third Test Value : 0.3678794411714424

Fourth Test Value : 1.6487212707001282
```

JavaScript - Math floor Method

Previous Page Next Page

Description

This method returns the largest integer less than or equal to a number.

Syntax

Its syntax is as follows −

```
Math.floor( x ) ;
```

Parameter Details

x − A numbers.

Return Value

Returns the largest integer less than or equal to a number x.

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math floor() Method</title>
   </head>

   <body>
      <script type = "text/javascript">
         var value = Math.floor(10.3);
         document.write("First Test Value : " + value );

         var value = Math.floor(30.9);
         document.write("<br />Second Test Value : " + value );

         var value = Math.floor(-2.9);
         document.write("<br />Third Test Value : " + value );

         var value = Math.floor(-2.2);
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

```
First Test Value : 10

Second Test Value : 30

Third Test Value : -3

Fourth Test Value : -3
```

JavaScript - Math log Method

Previous Page Next Page

Description

This method returns the natural logarithm (base E) of a number. If the value of number is negative, the return value is always **NaN**.

Syntax

Its syntax is as follows −

```
Math.log( x ) ;
```

Parameter Details

x − A numbers.

Return Value

Returns the natural logarithm (base E) of a number.

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math log() Method</title>
   </head>
   <body>
      <script type = "text/javascript">
         var value = Math.log(10);
         document.write("First Test Value : " + value );

         var value = Math.log(0);
         document.write("<br />Second Test Value : " + value );

         var value = Math.log(-1);
         document.write("<br />Third Test Value : " + value );

         var value = Math.log(100);
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

```
First Test Value : 2.302585092994046

Second Test Value : -Infinity

Third Test Value : NaN

Fourth Test Value : 4.605170185988092
```

JavaScript - Math max Method

Previous Page Next Page

Description

This method returns the largest of zero or more numbers. If no arguments are given, the results is –**Infinity**.

Syntax

Its syntax is as follows –

```
Math.max(value1, value2, ... valueN ) ;
```

Parameter Details

value1, value2, ... valueN : Numbers.

Return Value

Returns the largest of zero or more numbers.

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math max() Method</title>
   </head>

   <body>
      <script type = "text/javascript">
         var value = Math.max(10, 20, -1, 100);
         document.write("First Test Value : " + value );

         var value = Math.max(-1, -3, -40);
         document.write("<br />Second Test Value : " + value );

         var value = Math.max(0, -1);
         document.write("<br />Third Test Value : " + value );

         var value = Math.max(100);
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

```
First Test Value : 100

Second Test Value : -1

Third Test Value : 0

Fourth Test Value : 100
```

JavaScript - Math min Method

Previous Page Next Page

Description

This method returns the smallest of zero or more numbers. If no arguments are given, the results is **+Infinity**.

Syntax

Its syntax is as follows −

```
Math.min(value1, value2, ... valueN ) ;
```

Parameter Details

value1, value2, ... valueN : Numbers.

Return Value

Returns the smallest of zero or more numbers.

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math min() Method</title>
   </head>

   <body>
      <script type = "text/javascript">
         var value = Math.min(10, 20, -1, 100);
         document.write("First Test Value : " + value );

         var value = Math.min(-1, -3, -40);
         document.write("<br />Second Test Value : " + value );

         var value = Math.min(0, -1);
         document.write("<br />Third Test Value : " + value );

         var value = Math.min(100);
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

```
First Test Value : -1
Second Test Value : -40
Third Test Value : -1
Fourth Test Value : 100
```

JavaScript - Math pow Method

Previous Page Next Page

Description

This method returns the base to the exponent power, that is, **base**$^{\textbf{exponent}}$.

Syntax

Its syntax is as follows −

```
Math.pow(base, exponent ) ;
```

Parameter Details

- **base** − The base number.
- **exponents** − The exponent to which to raise base.

Return Value

Returns the base to the exponent power, that is, **base**$^{\textbf{exponent}}$.

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math pow() Method</title>
   </head>

   <body>
      <script type = "text/javascript">
         var value = Math.pow(7, 2);
         document.write("First Test Value : " + value );

         var value = Math.pow(8, 8);
         document.write("<br />Second Test Value : " + value );

         var value = Math.pow(-1, 2);
         document.write("<br />Third Test Value : " + value );

         var value = Math.pow(0, 10);
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

```
First Test Value : 49

Second Test Value : 16777216

Third Test Value : 1

Fourth Test Value : 0
```

JavaScript - Math random Method

Previous Page Next Page

Description

This method returns a random number between 0 (inclusive) and 1 (exclusive).

Syntax

Its syntax is as follows −

```
Math.random() ;
```

Return Value

Returns a random number between 0 (inclusive) and 1 (exclusive).

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math random() Method</title>
   </head>

   <body>
      <script type = "text/javascript">
         var value = Math.random( );
         document.write("First Test Value : " + value );

         var value = Math.random( );
         document.write("<br />Second Test Value : " + value );

         var value = Math.random( );
         document.write("<br />Third Test Value : " + value );

         var value = Math.random( );
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

First Test Value : 0.7245902854795561
Second Test Value : 0.0013747371880856 73
Third Test Value : 0.29759907212343606
Fourth Test Value : 0.015434063749474758

JavaScript - Math round Method

Previous Page Next Page

Description

This method returns the value of a number rounded to the nearest integer.

Syntax

Its syntax is as follows −

```
Math.round( x ) ;
```

Return Value

Returns the value of a number rounded to the nearest integer.

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math round() Method</title>
   </head>
   <body>
      <script type = "text/javascript">
         var value = Math.round( 0.5 );
         document.write("First Test Value : " + value );

         var value = Math.round( 20.7 );
         document.write("<br />Second Test Value : " + value );

         var value = Math.round( 20.3 );
         document.write("<br />Third Test Value : " + value );

         var value = Math.round( -20.3 );
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

```
First Test Value : 1

Second Test Value : 21

Third Test Value : 20

Fourth Test Value : -20
```

JavaScript - Math sin Method

Previous Page Next Page

Description

This method returns the sine of a number. The **sin** method returns a numeric value between -1 and 1, which represents the sine of the argument.

Syntax

Its syntax is as follows −

```
Math.sin( x ) ;
```

Parameter Details

x − A number

Return Value

Returns the sine of a number.

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math sin() Method</title>
   </head>

   <body>
      <script type = "text/javascript">
         var value = Math.sin( 0.5 );
         document.write("First Test Value : " + value );

         var value = Math.sin( 90 );
         document.write("<br />Second Test Value : " + value );

         var value = Math.sin( 1 );
         document.write("<br />Third Test Value : " + value );

         var value = Math.sin( Math.PI/2 );
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

```
First Test Value : 0.479425538604203

Second Test Value : 0.8939966636005578

Third Test Value : 0.8414709848078965

Fourth Test Value : 1
```

JavaScript - Math sqrt Method

Previous Page Next Page

Description

This method returns the square root of a number. If the value of a number is negative, sqrt returns NaN.

Syntax

Its syntax is as follows −

```
Math.sqrt( x ) ;
```

Parameter Details

x − A number

Return Value

Returns the square root of a given number.

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math sqrt() Method</title>
   </head>

   <body>
      <script type = "text/javascript">
         var value = Math.sqrt( 0.5 );
         document.write("First Test Value : " + value );

         var value = Math.sqrt( 81 );
         document.write("<br />Second Test Value : " + value );

         var value = Math.sqrt( 13 );
         document.write("<br />Third Test Value : " + value );

         var value = Math.sqrt( -4 );
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

```
First Test Value : 0.7071067811865476

Second Test Value : 9

Third Test Value : 3.605551275463989

Fourth Test Value : NaN
```

JavaScript - Math tan Method

Previous Page Next Page

Description

This method returns the tangent of a number. The tan method returns a numeric value that represents the tangent of the angle.

Syntax

Its syntax is as follows −

```
Math.tan( x ) ;
```

Parameter Details

x − A number representing an angle in radians.

Return Value

Returns the tangent of a number.

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math tan() Method</title>
   </head>

   <body>
      <script type = "text/javascript">
         var value = Math.tan( -30 );
         document.write("First Test Value : " + value );

         var value = Math.tan( 90 );
         document.write("<br />Second Test Value : " + value );

         var value = Math.tan( 45 );
         document.write("<br />Third Test Value : " + value );

         var value = Math.tan( Math.PI/180 );
         document.write("<br />Fourth Test Value : " + value );
      </script>
   </body>
</html>
```

Output

```
First Test Value : 6.405331196646276

Second Test Value : -1.995200412208242

Third Test Value : 1.6197751905438615

Fourth Test Value : 0.017455064928217585
```

JavaScript - Math toSource Method

Previous Page Next Page

Description

This method returns the string "Math". But this method does not work with IE.

Syntax

Its syntax is as follows −

```
Math.toSource() ;
```

Return Value

Returns the string "Math".

Example

Try the following example program.

```
<html>
   <head>
      <title>JavaScript Math toSource() Method</title>
   </head>

   <body>
      <script type = "text/javascript">
         var value = Math.toSource( );
         document.write("Value : " +  value );
      </script>
   </body>
</html>
```

Output

```
Value : Math
```

JavaScript - The Math Object

Previous Page Next Page

The **math** object provides you properties and methods for mathematical constants and functions. Unlike other global objects, **Math** is not a constructor. All the properties and methods of **Math** are static and can be called by using Math as an object without creating it.

Thus, you refer to the constant **pi** as **Math.PI** and you call the *sine* function as **Math.sin(x)**, where x is the method's argument.

Syntax

The syntax to call the properties and methods of Math are as follows

```
var pi_val = Math.PI;
var sine_val = Math.sin(30);
```

JavaScript - Math E Property

Previous Page Next Page

Description

This is an Euler's constant and the base of natural logarithms, approximately 2.718.

Syntax

Its syntax is as follows −

```
Math.E
```

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math E Property</title>
   </head>

   <body>
      <script type = "text/javascript">
         var property_value = Math.E
         document.write("Property Value is :" + property_value);
      </script>
   </body>
</html>
```

Output

```
Property Value is :2.718281828459045
```

JavaScript - Math LN2 Property

Previous Page Next Page

Description

It returns the natural logarithm of 2 which is approximately 0.693.

Syntax

Its syntax is as follows −

```
Math.LN2
```

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math LN2 Property</title>
   </head>

   <body>
      <script type = "text/javascript">
         var property_value = Math.LN2
         document.write("Property Value is : " + property_value);
      </script>

   </body>
</html>
```

Output

```
Property Value is : 0.6931471805599453
```

JavaScript - Math LN10 Property

Previous Page Next Page

Description

It returns the natural logarithm of 10 which is approximately 2.302.

Syntax

Its syntax is as follows −

```
Math.LN10
```

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math LN10 Property</title>
   </head>

   <body>
      <script type = "text/javascript">
         var property_value = Math.LN10
         document.write("Property Value is : " + property_value);
      </script>
   </body>
</html>
```

Output

```
Property Value is : 2.302585092994046
```

JavaScript - Math LOG2E Property

Previous Page Next Page

Description

This returns base 2 logarithm of E which is approximately 1.442.

Syntax

```
Math.LOG2E
```

Example

Live Demo

```
<html>
   <head>
      <title>JavaScript Math LOG2E Property</title>
   </head>

   <body>
      <script type = "text/javascript">
         var property_value = Math.LOG2E
         document.write("Property Value is : " + property_value);
      </script>
   </body>
</html>
```

This will produce following result −

```
Property Value is : 1.4426950408889633
```

JavaScript - Math PI Property

Previous Page Next Page

Description

It returns the ratio of the circumference of a circle to its diameter which is approximately 3.14159.

Syntax

Its syntax is as follows −

```
Math.PI
```

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math PI Property</title>
   </head>

   <body>
      <script type = "text/javascript">
         var property_value = Math.PI
         document.write("Property Value is : " + property_value);
      </script>
   </body>
</html>
```

Output

```
Property Value is : 3.1415926535897793
```

JavaScript - Math SQRT1_2 Property

Previous Page Next Page

Description

It returns the square root of 1/2; equivalently, 1 over the square root of 2 which is approximately 0.707.

Syntax

Its syntax is as follows −

```
Math.SQRT1_2
```

Example

Try the following example program.

Live Demo

```
<html>
   <head>
      <title>JavaScript Math SQRT1_2 Property</title>
   </head>

   <body>
      <script type = "text/javascript">
         var property_value = Math.SQRT1_2
         document.write("Property Value is : " + property_value);
      </script>
   </body>
</html>
```

Output

```
Property Value is : 0.7071067811865476
```

JavaScript - Math SQRT2 Property

Previous Page Next Page

Description

It returns the square root of 2 which is approximately 1.414.

Syntax

Its syntax is as follows −

```
Math.SQRT2
```