

JAVA.LANG.MATH.ATAN2 METHOD

http://www.tutorialspoint.com/java/lang/math_atan2.htm

Copyright © tutorialspoint.com

Description

The **java.lang.Math.atan2***doubley, doublex* Converts rectangular coordinates x, y to polar r, θ . This method computes the phase θ by computing an arc tangent of y/x in the range of $-\pi$ to π . Special cases:

- If either argument is NaN, then the result is NaN.
- If the first argument is positive zero and the second argument is positive, or the first argument is positive and finite and the second argument is positive infinity, then the result is positive zero.
- If the first argument is negative zero and the second argument is positive, or the first argument is negative and finite and the second argument is positive infinity, then the result is negative zero.
- If the first argument is positive zero and the second argument is negative, or the first argument is positive and finite and the second argument is negative infinity, then the result is the double value closest to π .
- If the first argument is negative zero and the second argument is negative, or the first argument is negative and finite and the second argument is negative infinity, then the result is the double value closest to $-\pi$.
- If the first argument is positive and the second argument is positive zero or negative zero, or the first argument is positive infinity and the second argument is finite, then the result is the double value closest to $\pi/2$.
- If the first argument is negative and the second argument is positive zero or negative zero, or the first argument is negative infinity and the second argument is finite, then the result is the double value closest to $-\pi/2$.
- If both arguments are positive infinity, then the result is the double value closest to $\pi/4$.
- If the first argument is positive infinity and the second argument is negative infinity, then the result is the double value closest to $3\pi/4$.
- If the first argument is negative infinity and the second argument is positive infinity, then the result is the double value closest to $-\pi/4$.
- If both arguments are negative infinity, then the result is the double value closest to $-3\pi/4$.

A result must be within 2 ulps of the correctly rounded result. Results must be semi-monotonic.

Declaration

Following is the declaration for **java.lang.Math.atan2** method

```
public static double atan2(double y, double x)
```

Parameters

- **y** -- the ordinate coordinate
- **x** -- the abscissa coordinate

Return Value

This method returns the *theta* component of the point r, θ in polar coordinates that corresponds to the point x, y in Cartesian coordinates.

Exception

- NA

Example

The following example shows the usage of `lang.Math.atan2` method.

```
package com.tutorialspoint;

import java.lang.*;

public class MathDemo {

    public static void main(String[] args) {

        // get a variable x which is equal to PI/2
        double x = Math.PI / 2;

        // get a variable y which is equal to PI/3
        double y = Math.PI / 3;

        // convert x and y to degrees
        x = Math.toDegrees(x);
        y = Math.toDegrees(y);

        // get the polar coordinates
        System.out.println("Math.atan2(" + x + ", " + y + ")=" + Math.atan2(x, y));

    }

}
```

Let us compile and run the above program, this will produce the following result:

```
Math.atan2(90.0, 59.99999999999999)=0.9827937232473292
```

Loading [MathJax]/jax/output/HTML-CSS/jax.js