

Java Math.sqrt() – Square Root

Java Math sqrt()

sqrt() accepts a double value as an argument, and returns the correctly rounded positive square root of the argument. The return value is of type double.

Following is the syntax of sqrt() method.

```
double value = sqrt(double x)
```

Since the definition of sqrt() function has double datatype as argument, you can pass int, float or long as arguments; because these datatypes could implicitly promote to double.

We shall learn about some of the special cases for sqrt() method with examples.

Example 1 – Math.sqrt(double)

In the following example, we use sqrt() method to find the square root of 10.

Java Program

```
public class MathExample {  
    public static void main(String[] args) {  
        double x = 10;  
        double sqrt_x = Math.sqrt(x);  
        System.out.println(sqrt_x);  
    }  
}
```

Output

```
3.1622776601683795
```

Example 2 – Math.sqrt(int)

In the following example, we pass an int value for the argument to sqrt() method.

Java Program

```
public class MathExample {
    public static void main(String[] args) {
        int x = 4;
        double sqrt_x = Math.sqrt(x);
        System.out.println(sqrt_x);
    }
}
```

Output

```
2.0
```

Similarly, you can provide a float or long value as argument to sqrt() method.

Example 3 – Math.sqrt(NaN)

In the following example, we pass Double.NaN as argument to sqrt() method. As per the definition of the sqrt() in Math class, the method should return NaN value.

Java Program

```
public class MathExample {
    public static void main(String[] args) {
        double x = Double.NaN;
        double sqrt_x = Math.sqrt(x);
        System.out.println(sqrt_x);
    }
}
```

Output

```
NaN
```

Example 4 – Math.sqrt() – With Positive Infinity as Argument

In the following example, we pass Double.POSITIVE_INFINITY as argument to sqrt() method. As per the definition of the sqrt() method in Math class, the method should return positive infinity.

Java Program

```
public class MathExample {
    public static void main(String[] args) {
        double x = Double.POSITIVE_INFINITY;
        double sqrt_x = Math.sqrt(x);
    }
}
```

```
        System.out.println(sqrt_x);
    }
}
```

Output

Infinity

Example 5 – Math.sqrt() – With Negative Infinity as Argument

In the following example, we pass `Double.POSITIVE_INFINITY` as argument to `sqrt()` method. As per the definition of the `sqrt()` method in `Math` class, the method should return `NaN` for negative infinity as input value.

Java Program

```
public class MathExample {
    public static void main(String[] args) {
        double x = Double.NEGATIVE_INFINITY;
        double sqrt_x = Math.sqrt(x);
        System.out.println(sqrt_x);
    }
}
```

Output

NaN

Conclusion

In this [Java Tutorial](#), we learned about **Java Math.sqrt()** function, with example programs.

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