

Reference > atan2()

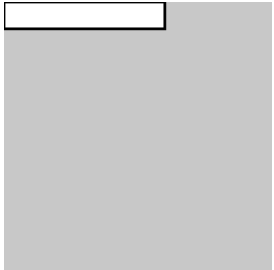
atan2()

Calculates the angle formed by a point, the origin, and the positive x-axis.

`atan2()` is most often used for orienting geometry to the mouse's position, as in `atan2(mouseY, mouseX)`. The first parameter is the point's y-coordinate and the second parameter is its x-coordinate.

By default, `atan2()` returns values in the range $-\pi$ (about -3.14) to π (3.14). If the `angleMode()` is `DEGREES`, then values are returned in the range -180 to 180.

Examples



```
function setup() {  
  createCanvas(100, 100);  
  
  describe('A rectangle at the top-left of the canvas rotates  
with mouse movements.');
```

```
function draw() {  
  background(200);  
  
  // Calculate the angle between the mouse  
  // and the origin.  
  let a = atan2(mouseY, mouseX);  
  
  // Rotate.  
  rotate(a);  
  
  // Draw the shape.  
  rect(0, 0, 60, 10);  
}
```



```
function setup() {  
  createCanvas(100, 100);  
  
  describe('A rectangle at the center of the canvas rotates  
with mouse movements.');
```

```
function draw() {  
  background(200);  
  
  // Translate the origin to the center.  
  translate(50, 50);  
  
  // Get the mouse's coordinates relative to the origin.  
  let x = mouseX - 50;  
  let y = mouseY - 50;  
  
  // Calculate the angle between the mouse and the origin.  
  let a = atan2(y, x);  
  
  // Rotate.  
  rotate(a);  
  
  // Draw the shape.  
  rect(-30, -5, 60, 10);  
}
```

Syntax

```
atan2(y, x)
```

Parameters

y	Number: y-coordinate of the point.
x	Number: x-coordinate of the point.

Returns

Number: arc tangent of the given point.

This page is generated from the comments in `src/math/trigonometry.js`. Please feel free to edit it and submit a pull request!

Related References

acos Calculates the arc cosine of a number.	angleMode Changes the unit system used to measure angles.	asin Calculates the arc sine of a number.	atan Calculates the arc tangent of a number.
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