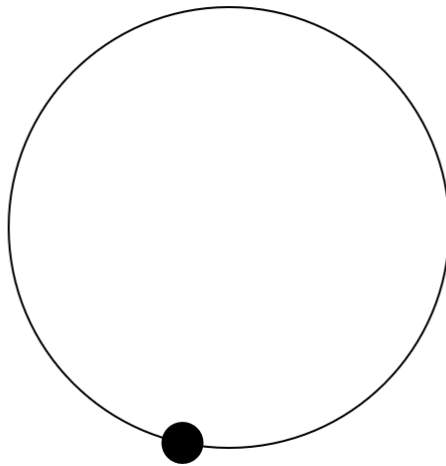


Art of Code

Circular motion is a movement in which an object travels along the circumference of a circle.

The Art of Code is a MA/MFA class that I am teaching at



Introduction

Setup

```
let radius;  
let angle = 0;  
let speed = 0.05;  
  
function setup() {  
  createCanvas(400, 300);  
  radius = width / 6;  
}  
  
function draw() {  
  background(255);  
  translate(width/2, height/2);  
  
  // Empty Circle  
  noFill();  
  circle(0, 0, radius * 2);  
  
  // Rotating Circle  
  fill(0);  
  let x = cos(angle) * radius;  
  let y = sin(angle) * radius;
```

```
circle(x, y, 20);  
  
// Increase angle every frame  
angle += speed;  
}
```

Code for the simple circular motion example above.

Working with circular motion requires a little bit of trigonometry knowledge so that we can convert between polar coordinate system and Cartesian coordinate system. If you haven't used trigonometry since school, you might need to brush up your skills. The following video from Khan Academy might help you get back on top of the basic concepts.

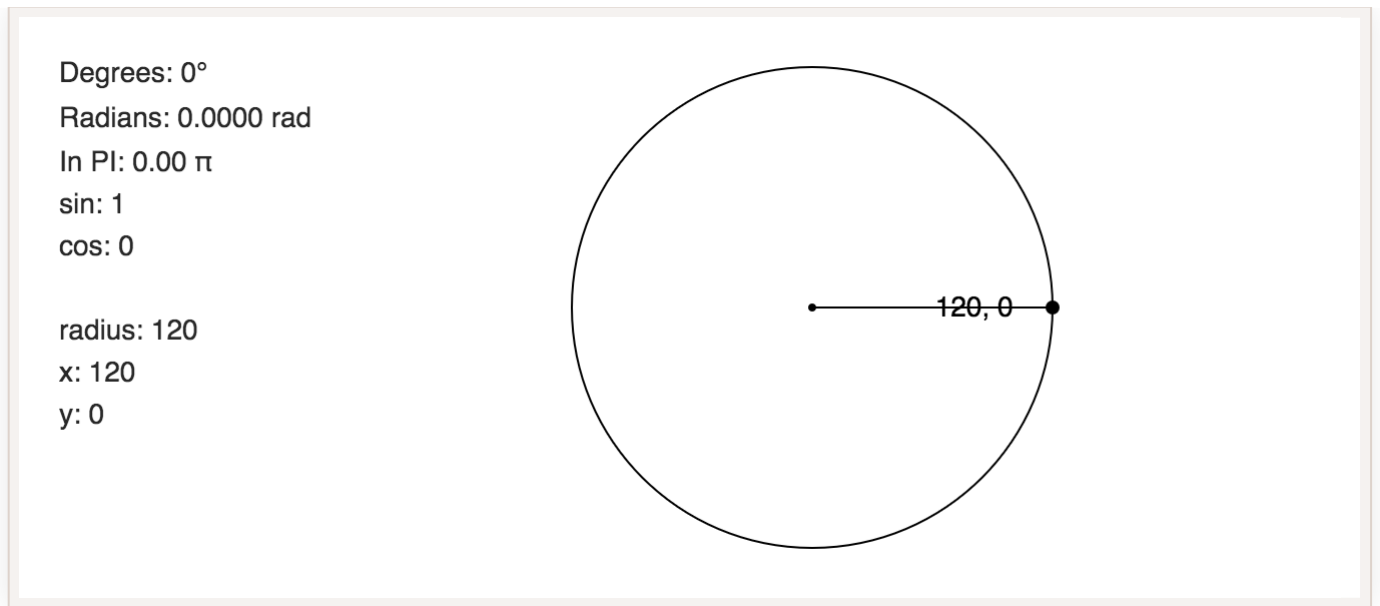
Basic trigonometry | Basic trigonometry | Trigonometry | Khan Academy



You can check out [the lesson's page at Khan Academy](#) to find more resources.

Below is a demo that shows how angles work in p5.js.

- Angle 0 is as shown below.
- Default `angleMode()` is `RADIANS`.
- A full circle is `360 DEGREES`, which is equal to `TWO_PI (2π)` in `RADIANS`.
- Using `sin(angle) * radius`, we can calculate x coordinate of a point on the circumference of a circle.
- Using `cos(angle) * radius`, we can calculate y coordinate of the same point.



Move your mouse to see the variables change.

As a result, sine and cosine are two numbers that oscillate between 1 and -1 according to angle change.

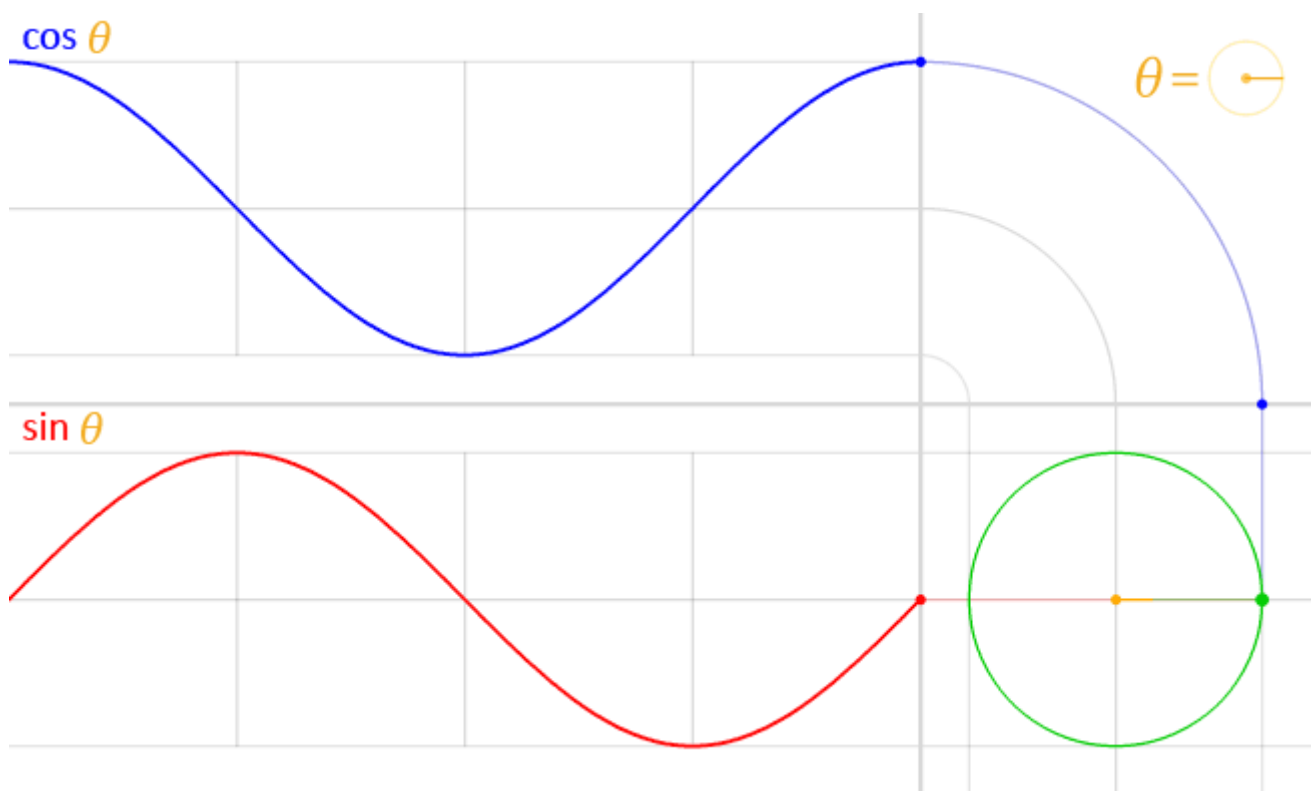
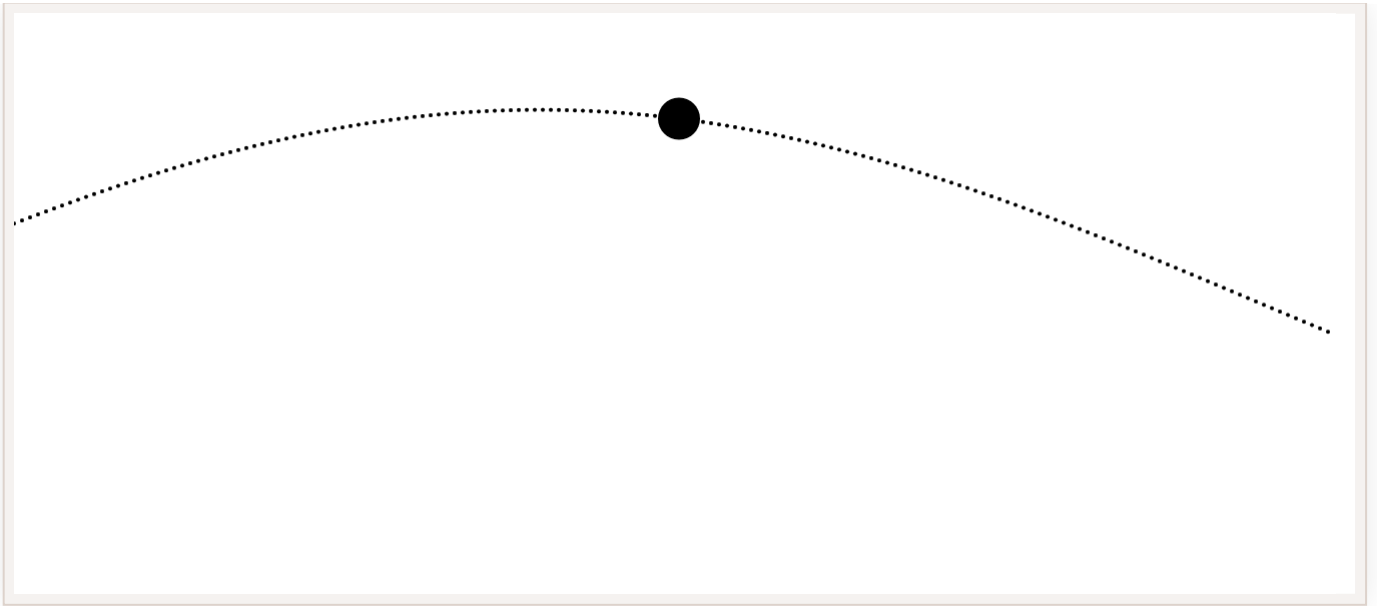
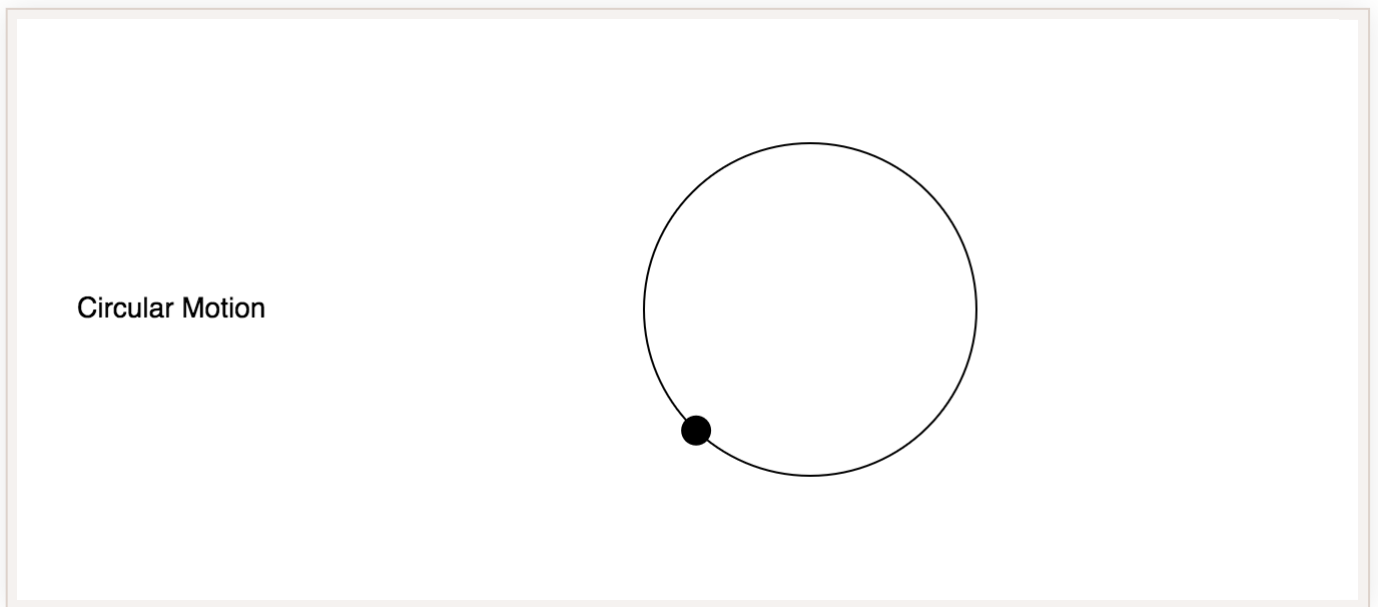


Image Credit

There are a lot of possibilities for exciting, creative usages.



Circular motion, simple harmonic motion, transverse waves are all related concepts. You can see in the demo below.



Adapted from a [GIF](#).