sub()

Subtracts from a vector's `x`, `y`, and `z` components.

`sub()` can use separate numbers, as in `v.sub(1, 2, 3)`, another p5.Vector object, as in `v.sub(v2)`, or an array of numbers, as in `v.sub([1, 2, 3])`.

If a value isn't provided for a component, it won't change. For example, `v.sub(4, 5)` subtracts 4 from `v.x`, 5 from `v.y`, and 0 from `v.z`. Calling `sub()` with no arguments, as in `v.sub()`, has no effect.

The static version of `sub()`, as in `p5.Vector.sub(v2, v1)`, returns a new p5.Vector object and doesn't change the originals.

Examples

```
function setup() {
  createCanvas(100, 100);

  background(200);

  // Style the points.
  strokeWeight(5);

  // Bottom right.
  let pos = createVector(75, 75);
  point(pos);

  // Top right.
  // Subtract numbers.
  pos.sub(0, 50);
  point(pos);

  // Top left.
  // Subtract a p5.Vector.
  let p2 = createVector(50, 0);
  pos.sub(p2);
  point(pos);

  // Bottom left.
  // Subtract an array.
  let arr = [0, -50];
  pos.sub(arr);
  point(pos);

  describe('Four black dots arranged in a square on a gray
background.');
}
```

```
function setup() {
  createCanvas(100, 100);

  background(200);

  // Create p5.Vector objects.
  let p1 = createVector(75, 75);
  let p2 = createVector(50, 50);

  // Subtract without modifying the original vectors.
  let p3 = p5.Vector.sub(p1, p2);

  // Draw the points.
  strokeWeight(5);
  point(p1);
  point(p2);
  point(p3);

  describe('Three black dots in a diagonal line from top left
to bottom right.');
}
```

```
function setup() {
  createCanvas(100, 100);

  describe('Three arrows drawn on a gray square. A red and a
blue arrow extend from the top left. A purple arrow extends
from the tip of the red arrow to the tip of the blue arrow.');
}

function draw() {
  background(200);

  let origin = createVector(0, 0);

  // Draw the red arrow.
  let v1 = createVector(50, 50);
  drawArrow(origin, v1, 'red');

  // Draw the blue arrow.
  let v2 = createVector(20, 70);
  drawArrow(origin, v2, 'blue');

  // Purple arrow.
  let v3 = p5.Vector.sub(v2, v1);
  drawArrow(v1, v3, 'purple');
}

// Draws an arrow between two vectors.
function drawArrow(base, vec, myColor) {
```

Syntax

```
sub(x, [y], [z])
```

```
sub(value)
```

```
sub(v1, v2, [target])
```

Parameters

x	Number: x component of the vector to subtract.
y	Number: y component of the vector to subtract.
z	Number: z component of the vector to subtract.
value	p5.Vector|Number[]: the vector to subtract
v1	p5.Vector: A p5.Vector to subtract from
v2	p5.Vector: A p5.Vector to subtract
target	p5.Vector: vector to receive the result.

This page is generated from the comments in src/math/p5.Vector.js . Please feel free to edit it and submit a pull request!

Related References

add
Adds to a vector's x, y, and z components.

angleBetween
Calculates the angle between two vectors.

array
Returns the vector's components as an array of numbers.

clampToZero
Replaces the components of a p5.Vector that are very close to zero with zero.