

How to calculate a Cross Product in Python

Authored by
stats writer

November 30, 2025

RECOMMENDED CITATION

stats writer (2025). *How to calculate a Cross Product in Python*. PSYCHOLOGICAL SCALES. Retrieved from <https://scales.arabpsychology.com/?p=102085>

The cross product of two vectors can be calculated in Python using the `numpy.cross()` function. This function takes two vectors as its parameters and returns the vector that is perpendicular to both. The two vectors must have the same number of elements in order for the cross product to be calculated. The resulting vector will have the same number of elements as the two input vectors. It is important to note that the cross product is only valid for three-dimensional vectors. If the two vectors are two-dimensional, then the result will be a scalar value.

Assuming we have vector A with elements (A1, A2, A3) and vector B with elements (B1, B2, B3), we can calculate the cross product of these two vectors as:

Cross Product =

For example, suppose we have the following vectors:

Vector A: (1, 2, 3)

Vector B: (4, 5, 6)

We could calculate the cross product of these vectors as:

Cross Product =

Cross Product =

Cross Product = (-3, 6, -3)

You can use one of the following two methods to calculate the cross product of two vectors in Python:

Method 1: Use `cross()` function from NumPy

```
import numpy as np
```

```
#calculate cross product of vectors A and B
```

```
np.cross(A, B)
```

Method 2: Define your own function

```
#define function to calculate cross product
```

```
def cross_prod(a, b):
```

```
    result = *b - a*b,
```

```
    a*b - a*b,
```

```
    a*b - a*b]
```

```
return result
```

```
#calculate cross product  
cross_prod(A, B)
```

The following examples show how to use each method in practice.

Example 1: Use `cross()` function from NumPy

The following code shows how to use the function from NumPy to calculate the cross product between two vectors:

```
import numpy as np
```

```
#define vectors
```

```
A = np.array()
```

```
B = np.array()
```

```
#calculate cross product of vectors A and B
```

```
np.cross(A, B)
```

The cross product turns out to be **(-3, 6, -3)**.

This matches the cross product that we calculated earlier by hand.

Example 2: Define your own function

The following code shows how to define your own function to calculate the cross product between two vectors:

```
#define function to calculate cross product
```

```
def cross_prod(a, b):
```

```
    result = *b - a*b,
```

```
    a*b - a*b,
```

```
    a*b - a*b]
```

```
    return result
```

```
#define vectors
```

```
A = np.array()
```

```
B = np.array()
```

```
#calculate cross product
```

```
cross_prod(A, B)
```

The cross product turns out to be **(-3, 6, -3)**.

This matches the cross product that we calculated in the previous example.

The following tutorials explain how to perform other common tasks in Python:

ARABPSYCHOLOGY.COM