

How can I calculate a cross product in Excel?

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To calculate a cross product in Excel, you can use the built-in function "CROSSPRODUCT", which takes two vectors as input and returns the cross product as a single value. First, arrange the two vectors in separate columns with their corresponding components in each row. Then, in a new cell, use the formula "`=CROSSPRODUCT(vector1, vector2)`". This will calculate the cross product and display the result in the cell. Alternatively, you can manually calculate the cross product by multiplying the corresponding components of each vector and then summing them up. Excel also allows you to use the "SUMPRODUCT" function, which can perform both steps in a single formula. Simply enter the formula "`=SUMPRODUCT(vector1, vector2)`" to obtain the cross product.

Calculate a Cross Product in Excel

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)

The following example shows how to calculate this exact cross product in Excel.

Example: Calculating Cross Product in Excel

To calculate the cross product between two vectors in Excel, we'll first input the values for each vector:

	A	B	C	D	E	F	G
1	Vector A	1	2	3			
2	Vector B	4	5	6			
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

Next, we'll calculate the first value of the cross product:

	A	B	C	D	E	F
1	Vector A	1	2	3		
2	Vector B	4	5	6		
3						
4	Formula	=(C1*D2)-(D1*C2)				
5	Cross Product	-3				
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

Then we'll calculate the second value:

	A	B	C	D	E	F	G
1	Vector A	1	2	3			
2	Vector B	4	5	6			
3							
4	Formula	=(D1*B2)-(B1*D2)					
5	Cross Product	-3	6				
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

Lastly, we'll calculate the third value:

	A	B	C	D	E	F	G
1	Vector A	1	2	3			
2	Vector B	4	5	6			
3							
4	Formula			$= (B1 * C2) - (C1 * B2)$			
5	Cross Product	-3	6	-3			
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

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

	A	B	C	D	E	F	G
1	Vector A	1	2	3			
2	Vector B	4	5	6			
3							
4							
5	Cross Product	-3	6	-3			
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

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