

P12. Cosine similarity is a similarity measure, widely used in document retrieval. Write a function named `cos_sim` to take 2 arguments each as a list of numbers, calculate cosine, and return the number.

Cosine similarity:

$$S = \frac{\sum_{i=1}^N a_i \cdot b_i}{\sqrt{\sum_{i=1}^N a_i^2} \cdot \sqrt{\sum_{i=1}^N b_i^2}},$$

where  $s$  is a similarity score;  $a_i$  and  $b_i$  are components of vectors representing documents  $A$  and  $B$ , respectively; and  $N$  is a vector length.

Hint: `math.sqrt` may be handy.

Example

When invoke by

```
cs = cos_sim([1, 0], [5, 5])
print(cs)
```

it results

```
=====
0.7071067811865475
=====
```

Example

When invoke by

```
cs = cos_sim([14, 0, 5], [5, 8, 4])  
print(cs)
```

it results

```
=====  
0.5908152858583454  
=====
```