

question3.py

```
1 import numpy as np
2
3 # Calculate cosine similarity.
4 # Cosine similarity is defined as the dot product of the two vectors,
5 # divided by the product of the magnitudes of the vectors.
6 def cosine_similarity(A, B):
7     return np.dot(A, B) / (np.linalg.norm(A) * np.linalg.norm(B))
8
9 # Calculate Euclidean distance.
10 # Euclidean distance is the straight-line distance between two points
11 # in n-dimensional space.
12 def euclidean_distance(A, B):
13     return np.linalg.norm(A - B)
14
15 # Declare two fixed, three-dimensional vectors.
16 v1 = np.array([1, 2, 3])
17 v2 = np.array([4, 5, 6])
18
19 # Compute cosine similarity
20 cs = cosine_similarity(v1, v2)
21 # Compute Euclidean distance
22 ed = euclidean_distance(v1, v2)
23
24 # Print results
25 print("Cosine Similarity:", cs)
26 print("Euclidean Distance:", ed)
27
```