

Your grade: 100%

Your latest: 100% • Your highest: 100% • To pass you need at least 80%. We keep your highest score.

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1. Compute the length of $\mathbf{x} = \begin{bmatrix} 1 \\ -1 \\ 3 \end{bmatrix}$ using the dot product. Do the exercises using pen and paper.

1 / 1 point

- ☐ $\sqrt{13}$
- ☐ $\sqrt{5}$
- ☐ 11
- ☒ $\sqrt{11}$
- ☐ $\sqrt{3}$
- ☐ 3

✓ **Correct**
Well done!

2. Compute the angle (in rad) between $\mathbf{x} = \begin{bmatrix} 3 \\ 4 \end{bmatrix}$ and $\mathbf{y} = \begin{bmatrix} -1 \\ -1 \end{bmatrix}$ using the dot product.

1 / 1 point

2.99

✓ **Correct**
Good job!

3. Compute the distance between $\mathbf{x} = \begin{bmatrix} 3 \\ 4 \end{bmatrix}$ and $\mathbf{y} = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$.

1 / 1 point

3.606

✓ **Correct**

1 / 1 point

4. Write a piece of code that computes the length of a given vector \mathbf{x} .

```
1 import numpy as np
2
3 def length(x):
4     """Compute the length of a vector"""
5     length_x = np.sqrt(x@x) # <--- compute the length of a vector x here.
6
7     return length_x
8
9 print(length(np.array([1,0])))
```

Run

Reset

✓ Correct
Good job!

1 / 1 point

5. We are given two vectors

$$\mathbf{x} = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}, \quad \mathbf{y} = \begin{bmatrix} -1 \\ 0 \\ 8 \end{bmatrix}$$

Compute the angle (in rad) between \mathbf{x} and $\mathbf{x} - \mathbf{y}$.

Do the exercises using pen and paper, but you will need a calculator at some point.

2.00

✓ Correct