

✔ Congratulations! You passed!

Grade received **100%** To pass 80% or higher[Go to next item](#)

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

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

✔ **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

3

✔ **Correct**
Good job!

3. Compute the distance between $\mathbf{x} = \begin{bmatrix} 3 \\ 4 \end{bmatrix}$ and $\mathbf{y} = \begin{bmatrix} 1 \\ -1 \end{bmatrix}$. Do the exercises using pen and paper. Enter your answer as a decimal number (calculator is fine to get it).

1 / 1 point

5.38

✔ **Correct**

4. Write a piece of code that computes the length of a given vector x .

1 / 1 point

```
1 import numpy as np
2
3 def length(x):
4     """Compute the length of a vector"""
5     length_x = 0
6     for i in range(len(x)):
7         length_x += x[i]**2 # <--- compute the length of a vector x here.
8
9     return np.sqrt(length_x)
10
11 print(length(np.array([1,0,1,1,1,1,1,11,1,1])))
```

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✔ **Correct**

Good job!

5. We are given two vectors

1 / 1 point

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

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

✔ **Correct**