

Congratulations! You passed!

Grade received 80%

To pass 80% or higher

Go to next
item

1. Compute the length of

$$\begin{bmatrix} 1 \\ -1 \\ 3 \end{bmatrix}$$

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

1 / 1 point

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

✓ **Correct**
Well done!

2. Compute the angle (in rad) between

$$\begin{bmatrix} 3 \\ 4 \end{bmatrix}$$

$\mathbf{x} = \begin{bmatrix} 3 \\ 4 \end{bmatrix}$ and $\mathbf{y} = \begin{bmatrix} 1 \\ -1 \end{bmatrix}$ using the dot product. Do the exercises using pen and paper, but you will need a calculator at some point.

0 / 1 point

When you are asked to enter numerical answers, please use decimal numbers (e.g., 1.4 or 1.41 instead of $\sqrt{2}$)

0.1419

✗ **Incorrect**
Remember that the angle is given as $\theta = \arccos\left(\frac{\mathbf{x}^T \mathbf{y}}{\|\mathbf{x}\| \|\mathbf{y}\|}\right)$

3. Compute the distance between

$$\begin{bmatrix} 3 \\ 4 \end{bmatrix}$$

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

1 / 1 point

3.6056

 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 = np.linalg.norm(x) # <--- compute the length of a vector x here.
6
7      return length_x
8
9  print(length(np.array([1,0])))

```

Run

Reset

1.0

 Correct

Good job!

5. We are given two vectors

1 / 1 point

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

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.

2.0028

 Correct