

TOTAL POINTS 5

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

- ☒  $\sqrt{11}$   
☐ 11  
☐  $\sqrt{13}$   
☐  $\sqrt{5}$   
☐  $\sqrt{3}$   
☐ 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. Do the exercises using pen and paper, but you will need a calculator at some point.

1 / 1 point

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

1.71

✓ 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

3.61

✓ 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.dot(x,x)**0.5 # <--- 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!

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.

2.00

✓ Correct