✓ **Congratulations! You passed!**
TO PASS 80% or higher

Keep Learning

GRADE
100%

Dot product

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

○ $\sqrt{5}$

○ $\sqrt{3}$

○ 3

○ $\sqrt{13}$

◉ $\sqrt{11}$

○ 11

✓ **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 $\mathbf{y} = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$.
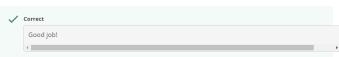
1 / 1 point

```
3.61
```

✓ **Correct**

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

1 / 1 point

```python
1   import numpy as np
2
3 ▾ def length(x):
4       """Compute the length of a vector"""
5       sq = []
6 ▾     for i in x:
7           b = np.square(i)
8           sq.append(b)
9       length_x = np.sqrt(np.sum(sq))
10      #length_x = np.sqrt(np.square(x[0] + np.square(x[1]))) # <--- compute the
            length of a vector x here.
11
12      return length_x
13
14  print(length(np.array([2,0])))
15
16
```

Run

Reset

```
2.0
```

✓ **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**