Congratulations! You passed!

Grade received 100% To pass 80% or higher

Go to next item

1. What is the mean of the dataset $\mathcal{D} = \{1, 2, 3\}$? 1 / 1 point

Do the exercises using pen and paper.

- 3
- 2
- 6

Correct
That's it. Good job!

2. Compute the mean of the following dataset: 1 / 1 point

$$\mathcal{D} = \left\{ \begin{bmatrix} 1 \\ 4 \\ 7 \end{bmatrix}, \begin{bmatrix} 2 \\ 5 \\ 8 \end{bmatrix}, \begin{bmatrix} 3 \\ 6 \\ 9 \end{bmatrix} \right\}$$

Do the exercises using pen and paper.

- $\begin{bmatrix} 2 \\ 5 \\ 8 \end{bmatrix}$
- $\begin{bmatrix} -2 \\ -5 \\ -8 \end{bmatrix}$
- $\begin{bmatrix} 6 \\ 15 \\ 24 \end{bmatrix}$

Correct
Well done!

3. What is the mean of the following dataset, **after** multiplying each sample in the dataset by 2? 1 / 1 point

$$\mathcal{D} = \left\{ \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}, \begin{bmatrix} 3 \\ 4 \\ 5 \end{bmatrix}, \begin{bmatrix} 5 \\ 3 \\ 1 \end{bmatrix} \right\}$$

- $\begin{bmatrix} 18 \\ 18 \\ 18 \end{bmatrix}$
- $\begin{bmatrix} 6 \\ 6 \\ 6 \end{bmatrix}$
- $\begin{bmatrix} 3 \\ 3 \\ 3 \end{bmatrix}$

Correct
Well done!

4. What is the mean of the following dataset, **after** adding $\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$ to each sample in the following dataset? 1 / 1 point

$$\mathcal{D} = \left\{ \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}, \begin{bmatrix} 3 \\ 4 \\ 5 \end{bmatrix}, \begin{bmatrix} 5 \\ 3 \\ 1 \end{bmatrix} \right\}$$

- $\begin{bmatrix} 4 \\ 5 \\ 6 \end{bmatrix}$
- $\begin{bmatrix} 3 \\ 3 \\ 3 \end{bmatrix}$
- $\begin{bmatrix} 2 \\ 1 \\ 0 \end{bmatrix}$

Correct
Well done!

5. Assuming that we know the mean $\bar{x}_{n-1}$ of a dataset $\mathcal{D}_{n-1}$ with $n-1$ data points. Now, suppose that we collect another data point, which we denote by x_*. Select the correct formula that computes the correct new mean $\bar{x}_n$ of the full data set $\mathcal{D}_n = \mathcal{D}_{n-1} \cup \{x_*\}$, i.e., we add x_* to the dataset $\mathcal{D}$. **1 / 1 point**

- (●) $\bar{x}_n = \bar{x}_{n-1} + \frac{1}{n}(x_* - \bar{x}_{n-1})$
- ( ) $\bar{x}_n = \bar{x}_{n-1} + \frac{1}{n+1}(x_* - \bar{x}_{n-1})$
- ( ) $\bar{x}_n = \bar{x}_{n-1} + \frac{1}{n+1}(\bar{x}_{n-1} - x_*)$
- ( ) $\bar{x}_n = \bar{x}_{n-1} + \frac{1}{n-1}(x_* - \bar{x}_{n-1})$

Correct
Excellent!

6. Assuming you are given an image as a two dimensional array of shape 28 x 28. Write a small piece of python code to reshape this image to a vector of length 784 (=28 x 28). **1 / 1 point**

Hint: This can be a one-liner.

```python
import numpy as np

def reshape(x):
    """return x_reshaped as a flattened vector of the multi-dimensional array x"""
    x_reshaped = np.reshape(x, (-1,))
    return x_reshaped

```

Run
Reset

No Output

Correct
Good job!