Your grade: 100%

Your latest: **100%** • Your highest: **100%** • To pass you need at least 80%. We keep your highest score.

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

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

- (●) $\begin{bmatrix} 6 \\ 6 \\ 6 \end{bmatrix}$
- ( ) $\begin{bmatrix} 18 \\ 18 \\ 18 \end{bmatrix}$
- ( ) $\begin{bmatrix} 3 \\ 3 \\ 3 \end{bmatrix}$

Correct
Well done!

Do this exercise using pen and paper.

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

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

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

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

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

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

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.

```
import numpy as np

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

```

Run

Reset

Correct
Good job!