

## 1 Question 1

- PCA: Principal component analysis aims to find the directions of maximum variance in high-dimensional data and project it onto a new low-dimensional subspace.
- MDS: Multidimensional scaling aims to preserve the pairwise distances between data points in high-dimensional space in a low-dimensional representation.
- t-SNE: t-distributed stochastic neighbor embedding aims to preserve the local structure of the high-dimensional data by minimizing the divergence between probabilities of similar points in high and low-dimensional space.

## 2 Question 2

- PCA: It can only capture linear relationships in the data.
- MDS: It can be sensitive to outliers and may not always produce the best low-dimensional representation of the data.
- t-SNE: It can be computationally expensive, especially for large datasets and it can also be sensitive to the choice of parameters.