1. Derive the mathematical relationship between cosine similarity and Euclidean distance when each data object has an *L2* length of 1.

- 2. We consider the following data points: (2, 19), (9, 6), (7, 15), (5, 12).
 - a) Calculate the covariance matrix of this set of data.
 - b) Calculate the correlation coefficient between the two attributes.