# In-Class-5

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1. Which one(s) shows all of the features are independent? Why?

Matrix B.

This covariance matrix is an identity matrix, suggesting that all features are independent to each other.

2. Which one(s) shows some, but not all, of the features are independent? Why?

Matrix C.

In this covariance matrix, we have values both not-zero and zero. Zero value suggests the presence of independent features and non-zero values suggest the presence of dependent features.

3. Which one(s) show that features a and b are interdependent? Why?

Matrix A.

In this covariance matrix, we do not have any zero values. This suggest that all features are interdependent.

4. Point A = (1,4,8); Point B = (3,8,2)

Euclidean distance between Points A and B = Square-root [(1-3)^2 + (4-8)^2 +(8-2)^2 ]

= Square-root (56) = 7.5

5. What is the class of the test sample if k = 3?

Cat

6. Why?

If we sort, in ascending order, the Euclidean distances from Test sample – the first three classes are Cat, Cat and Dog. As 2 out of 3 classes are Cat, we can say that Test sample belongs to class ‘Cat’.