

4-9-10

1. Matrix B because the covariance on the diagonal is all 1 and the rest of the covariances are 0 so that means it is independent
2. Matrix C because in matrix C The covariance of a/b with c is always 0 and the variance of C is 1 but the covariance of a,b is .1 so there is a little dependence there.
3. Matrices A and C show interdependence between a,b because the covariance in both is >0 which means there is some dependence.

4.
$$\sqrt{(3-1)^2 + (8-4)^2 + (2-8)^2} = \sqrt{4 + 16 + 26} = \sqrt{56} \approx 7.48$$

5. Cat because the 3 nearest neighbors are Cat (3.9), Cat (7.5), Dog (12.5). Since 2 cats appear and 1 dog appears, Cat is the classification for $k = 3$