CSCI3320 HW 5 Chung Tsz Ting / 1155110208

1. The new covariance matrix will be appending a row and column to the original covariance matrix,

i.e. , where

is the previous covariance matrix with shape of nxn and

is a column covariance vector with shape 1xn and

is the row covariance vector with shape nx1 and same value as due to the property of covariance matrix and

is the variance of the new feature.

Thus,