PCA

1) (D+1) → (D)

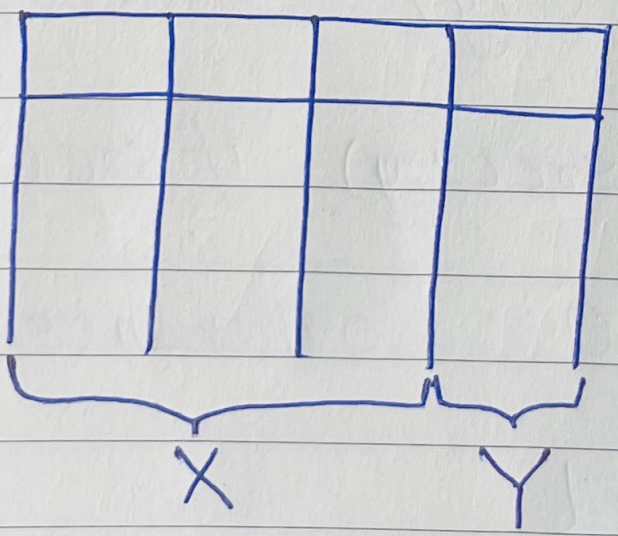
2) Mean for every (D)

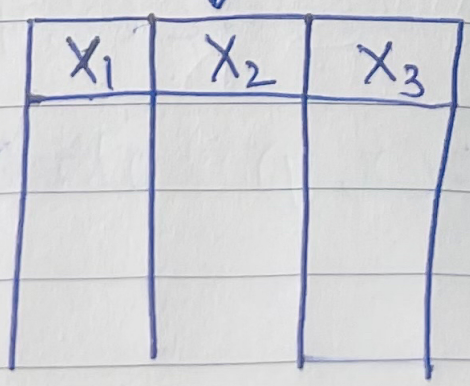
3) Covariance Matrix

4) Eigen Vectors & Eigen Values

5) Top 'K' Eigen values for 'K' PCs.

(1)





② $\bar{X}_1, \bar{X}_2, \bar{X}_3$

③ $cov(x,y) = \frac{1}{n} \sum_{i=1}^{n} (x-\bar{x})(y-\bar{y})$

↓

$A =$

	x_1	x_2	x_3
x_1			
x_2			
x_3			

④ $|A - \lambda I| = 0$

$$\det\left(\begin{bmatrix} x_1x_1 & x_1x_2 & x_1x_3 \\ x_2x_1 & x_2x_2 & x_2x_3 \\ x_3x_1 & x_3x_2 & x_3x_3 \end{bmatrix} - \lambda \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}\right) = 0$$

→ $\lambda_1, \lambda_2, \lambda_3$

→ $AV = \lambda V \rightarrow$ $[A][V_1] = [\lambda_1][V_1]$

⑤ Select the top eigen values.