# In-Class-12

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1. If A = ([[1,2,3], [3,4,5], [6,7,8]]), what is the X\_centered array?

|  |  |  |  |
| --- | --- | --- | --- |
|  | 1 | 2 | 3 |
| A = | 3 | 4 | 5 |
|  | 6 | 7 | 8 |
| Mean = | 3.333333 | 4.333333 | 5.333333 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | -2.33333333 | -2.33333333 | -2.33333333 |
| X\_centered = | -0.33333333 | -0.33333333 | -0.33333333 |
|  | 2.66666667 | 2.66666667 | 2.66666667 |

1. If the covariance array of the X\_centered array is: ([[6.33, 4.33, -3.33], [4.33, 7.23, -5.12], [-3.33, -5.12, 4.89]]):

|  |  |  |  |
| --- | --- | --- | --- |
|  | 6.33 | 4.33 | -3.33 |
| X\_centered = | 4.33 | 7.23 | -5.12 |
|  | -3.33 | 5.12 | 4.89 |

1. What is the variance of the 1st input feature?

6.33

1. What is the covariance between the 1st and 2nd features?

4.33

1. If the eigenvalues are: [4.22 0.24 0.08 0.02], What is the number of transformed features (k) required for PoV > 97%?

L1 = 4.22; L2 = 0.24; L3 = 0.08; L4 = 0.02

PoV = (L1 + L2) / (L1 + L2 + L3 + L4) = 4.46/4.56 = 97.8%

Number of transformed features k = 2