Unit 7 - Week 5

Assignment 5

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-03-04, 23:59 IST.

1) If X is a matrix whose columns are zero mean, then the covariance matrix $\sum$ is givenby: *1 point*

- $\frac{1}{m}X^TX$
- $\frac{1}{m}X^{-1}X$
- $\frac{1}{m}XX^{-1}$
- $\frac{1}{m}XX^T$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{1}{m}X^TX$

2) Consider the following vectors, *1 point*

$$\begin{bmatrix}3\\5\\7\end{bmatrix}\begin{bmatrix}1\\2\\2\end{bmatrix}\begin{bmatrix}4\\7\\4\end{bmatrix}$$

Are these vectors basis for R3?

- Yes
- No

No, the answer is incorrect.
Score: 0
Accepted Answers:
Yes

3) Compute the Correlation between A and B. *1 point*

A	B
11	15
12	30
15	14
17	14
21	34

- 0.786
- 0.123
- 0.812
- 0.384
- None

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.384

4) Recall Eigenvalue decomposition, in which of the following condition does U^{-1} exists? *1 point*

- If the columns of U are linearly independent
- If the columns of U are linearly dependent
- If the columns of U are either linearly dependent or linearly independent
- None of these

No, the answer is incorrect.
Score: 0
Accepted Answers:
If the columns of U are linearly independent

5) A matrix M is called stochastic matrix if all the entries are positive and sum of the elements in each column is equal to __. *1 point*

- 1
- √2
- 0
- -1

No, the answer is incorrect.
Score: 0
Accepted Answers:
1

6) Consider the following data: *1 point*

x	y	z
0.5	1.5	1.4
0.65	0.98	0.98
0.54	0	0.12
0.25	0.59	0.6
0.82	2	2
0.74	0.89	0.89
0.26	0.53	0.52
0.46	0.26	0.27
0.38	0.97	0.95
1	1	1

Is column z adding any new information to the data?

- Yes
- No

No, the answer is incorrect.
Score: 0
Accepted Answers:
No

7) For the data given in question no.6, What is the correlation between y and z? *1 point*

- 0.5
- 1.01
- 0.997
- 0.1

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.997

8) If λ_d is the dominant eigenvalue of a matrix, what would happen to the sequence x_0 , Ax_0 , A^2x_0, ... if *1 point*

I. $\|\lambda_d\|>1$	a. will vanish
II. $\|\lambda_d\|<1$	b. will reach a steady state
III. $\|\lambda_d\|=1$	c. will explode

- I-c,II-a,III-b
- I-a, II-b,III-c
- I-c,II-b,III-a
- None of these

No, the answer is incorrect.
Score: 0
Accepted Answers:
I-c,II-a,III-b

9) Time complexity of Gaussian elimination is _____. *1 point*

- $O(n^2)$
- $O(n^3)$
- O(n)
- None of these

No, the answer is incorrect.
Score: 0
Accepted Answers:
$O(n^3)$

10) Which of the following is the most dominant eigen value? *1 point*

- 6
- 3
- -20
- 10

No, the answer is incorrect.
Score: 0
Accepted Answers:
-20