Unit 2: Quiz

Due Jan 31 at 11:59pm **Points** 12 **Questions** 12
Available until Feb 1 at 3am **Time Limit** None

This quiz was locked Feb 1 at 3am.

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	7 minutes	12 out of 12

Score for this quiz: **12** out of 12
Submitted Jan 20 at 6:50pm
This attempt took 7 minutes.

Question 1

1 / 1 pts

Given two sets, A={1, 2, 3, 4, 5}, B={1, 4, 7, 9, 10}. What is A ∩ B?

Correct!

- (•) {1, 4}
- ( ) {1, 2, 3, 4, 5}
- ( ) {1, 2, 3, 4, 5, 7, 9, 10}
- ( ) {1, 4, 7, 9, 10}

Question 2

1 / 1 pts

What is $\frac{\partial(x^T ABx)}{\partial x}$ if AB is symmetric?

- x
- x^T

Correct!

- $2ABx$
- $2AB$

Question 3

1 / 1 pts

Given matrix $X = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, what is the value of trace *(X)?*

- 3

Correct!

- 5
- 7
- 4

Question 4

1 / 1 pts

Which of the following is always correct?

- trace(X+Y)= trace(X)- trace(Y)
- trace(X+Y)= trace(X)/trace(Y)

Correct!

- trace(X+Y)= trace(X)+trace(Y)
- trace(X+Y)= trace(X)* trace(Y)

Question 5

1 / 1 pts

The table below shows the purchase history of 10 customers from a set of zip codes that bought organic tea or organic coffee. Using Bayes' Rule, what is the probability that a person who lives in the 44005 zip code and bought organic coffee will likely not buy the organic tea?

CustomerID	Zip Code	Bought Organic Coffee	Bought Organic Tea
1	44005	Yes	Yes
2	44001	No	No
3	44001	Yes	Yes
4	44005	No	No
5	44003	Yes	No
6	44005	No	Yes
7	44005	No	No
8	44001	No	No
9	44005	Yes	Yes
10	44003	Yes	Yes

- 0.24
- 0.5

Correct!

- 0
- 0.76

Question 6

1 / 1 pts

The table below shows the purchase history of 10 customers from a set of zip codes that bought organic tea or organic coffee. What is the prior probability that a customer came from area with zip code 44001?

CustomerID	Zip Code	Bought Organic Coffee	Bought Organic Tea
1	44005	Yes	Yes
2	44001	No	No
3	44001	Yes	Yes
4	44005	No	No
5	44003	Yes	No
6	44005	No	Yes
7	44005	No	No
8	44001	No	No
9	44005	Yes	Yes
10	44003	Yes	Yes

- 0.5
- 0.3

Correct!

- 0.07
- 0.7

Question 7

1 / 1 pts

Assume that X is a uniformly distributed random variable that takes values from 1 to 40. What is the value of PMF(X=20)?

- 1/40

Correct!

- 20/40
- 1/20

40/40

Question 8

1 / 1 pts

If $x \sim p_x(x)$ and $y \sim p_y(y)$ are independent, what is $p(x|y)$ =?

Correct!

- [x] $p_x(x)$
- [ ] 0
- [ ] $p_x(x)p_y(y)$
- [ ] $p_y(y)$

Question 9

1 / 1 pts

Given two sets, A={1, 2, 3, 4, 5}, B={1, 3, 5}. Which of the following is true (choose all that apply)?

- [ ] A∩B = Φ
- [ ] A⊂B

Correct!

- [x] B⊂A

Correct!

- [x] A∩B = B

Question 10

1 / 1 pts

Given matrix $X = \begin{bmatrix} 1 & 0 \\ 0 & 4 \end{bmatrix}$, what is the X^{-1}?

- $\begin{bmatrix} 0 & -0.25 \\ -1 & 0 \end{bmatrix}$
- $\begin{bmatrix} -1 & 0 \\ 0 & -4 \end{bmatrix}$
- $\begin{bmatrix} 0 & 4 \\ 1 & 0 \end{bmatrix}$

Correct!

- $\begin{bmatrix} 1 & 0 \\ 0 & 0.25 \end{bmatrix}$

Question 11

1 / 1 pts

The following figures represent PDFs of normal distributions with different means. Which figure represents the normal distribution with the largest mean?

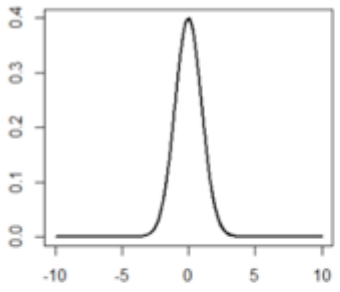

Figure 1

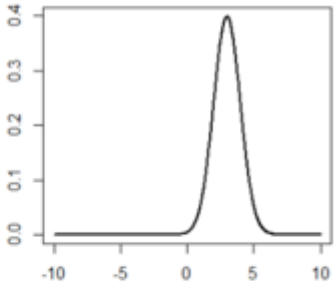

Figure 2

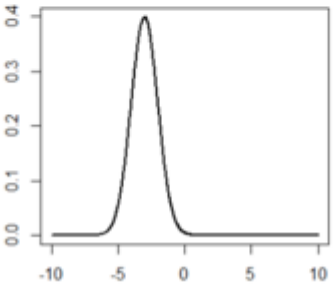

Figure 3

Correct!

- Figure 2

- Figure 3
- Figure 1

Question 12

1 / 1 pts

In a multivariate Gaussian distribution, if the "Σ" in the PDF is a diagonal matrix, what does it imply?

Correct!

- (selected) The features are statistically independent.
- The features are linearly correlated.
- The features have the same variance.
- The features have the same mean.

Quiz Score: **12** out of 12