Week 0: Assignment 0

Your last recorded submission was on 2023-01-22, 13:01 IST

Note : This assignment is only for practice purpose and it will not be counted towards the Final score

1) Given a matrix, $A = \begin{bmatrix} 1 & 2 & 0 \\ 3 & -1 & 4 \end{bmatrix}$, Find $A^T A$ *1 point*

- $\begin{bmatrix} 5 & 1 \\ 1 & 26 \end{bmatrix}$
- $\begin{bmatrix} 1 & 5 \\ 26 & 1 \end{bmatrix}$
- $\begin{bmatrix} 10 & -1 & 12 \\ -1 & 5 & -4 \\ 12 & -4 & 16 \end{bmatrix}$
- $\begin{bmatrix} 10 & -1 & 12 \\ -1 & 5 & -4 \\ 0 & -4 & 16 \end{bmatrix}$

Yes, the answer is correct.
Score: 1

Accepted Answers:
$\begin{bmatrix} 10 & -1 & 12 \\ -1 & 5 & -4 \\ 12 & -4 & 16 \end{bmatrix}$

2) Let $A = \begin{bmatrix} 1 & 2 \\ 4 & -3 \end{bmatrix}$ and $f(x) = x^2 + 2x - 11$. Find $f(A)$ *1 point*

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

Yes, the answer is correct.
Score: 1

Accepted Answers:
$\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$

3) Bin A contains five red balls and three blue balls. Bin B contains three red and two blue balls. One ball is drawn at random from each bin. Find the probability P that one is red and one is blue. ***1 point***

- ○ $\frac{9}{160}$
- ○ $\frac{9}{40}$
- ○ $\frac{19}{160}$
- ◉ $\frac{19}{40}$

Yes, the answer is correct.
Score: 1

Accepted Answers:
$\frac{19}{40}$

4) What is the probability of drawing out card of hearts or Queen from a well-shuffled pack of 52 cards in random? ***1 point***

- ○ $\frac{14}{52}$
- ◉ $\frac{4}{13}$
- ○ $\frac{5}{13}$
- ○ $\frac{14}{51}$

Yes, the answer is correct.
Score: 1

Accepted Answers:
$\frac{4}{13}$

5) Given two vectors $\vec{p}$ and $\vec{q}$ with magnitudes $\sqrt{3}$ and 2 and $\vec{p}.\vec{q} = \sqrt{6}$. Find the angle between them. ***1 point***

- ○ 0°
- ○ 30°
- ◉ 45°
- ○ 90°

Yes, the answer is correct.
Score: 1

Accepted Answers:
45°

6) Let $u = log(2x^2 + y^2)$. What is the value of $\frac{\partial u}{\partial y}$? **1 point**

- $\frac{4x}{(2x^2 + y^2)}$
- $\frac{2x}{(2x^2 + y^2)}$
- $\frac{2y^2}{(2x^2 + y^2)}$
- **(selected)** $\frac{2y}{(2x^2 + y^2)}$

Yes, the answer is correct.
Score: 1

Accepted Answers:
$\frac{2y}{(2x^2 + y^2)}$

7) Compute the Determinant of A. **1 point**

$$A = \begin{bmatrix} 2 & -3 & 4 \\ 1 & 2 & -3 \\ -1 & -2 & 5 \end{bmatrix}$$

- 8
- 12
- **(selected)** 14
- 18

Yes, the answer is correct.
Score: 1

Accepted Answers:
14

8) Differentiate $y = \frac{4x^3 + 1}{x}$ **1 point**

- $8x - x^2$
- **(selected)** $8x - x^{-2}$
- $4x^2 - x^2$
- $4x^2 - x^{-2}$

Yes, the answer is correct.
Score: 1

Accepted Answers:
$8x - x^{-2}$

9) Find the Rank of the Matrix A. *1 point*

$$\begin{bmatrix} 3 & 1 & 2 \\ 2 & 0 & 5 \\ 1 & 2 & 3 \end{bmatrix}$$

- (●) 3
- ( ) 2
- ( ) 1
- ( ) 0

Yes, the answer is correct.
Score: 1

Accepted Answers:
3

10) Solve: *1 point*

$\sum_{i=1}^{120}(4i-1)$

- (●) 28920
- ( ) 29040
- ( ) 120
- ( ) 29820

Yes, the answer is correct.
Score: 1

Accepted Answers:
28920

Check Answers and Submit

Your score is: 10/10