Started on	Friday, 12 March 2021, 8:30 AM
State	Finished
Completed on	Friday, 12 March 2021, 9:20 AM
Time taken	49 mins 35 secs
Grade	**16.00** out of 20.00 (**80**%)

Question **1**

Correct

Mark 2.00 out of 2.00

Drag the correct values in the increasing order

The rank of the following matrix is 1 if and only if the value of x is -4 ✔ or 4 ✔

$A = \begin{pmatrix} 2x & 4 \\ 8 & x \end{pmatrix}$

-2 -3

2 3

The correct answer is:
Drag the correct values in the increasing order

The rank of the following matrix is 1 if and only if the value of x is [-4] or [4]

$A = \begin{pmatrix} 2x & 4 \\ 8 & x \end{pmatrix}$

Question **2**

Correct

Mark 2.00 out of 2.00

Fill in the blanks

The set of vectors $\{(1, 2, 3), (3, 2, 1), (2, 1, 3)\}$ is linearly

Independent

✔ in the vector space

R^3

✔

Question **3**

Incorrect

Mark 0.00 out of 2.00

Complex square matrix A is called Hermitian matrix if $A=(\overline{A})^T$ where $\overline{A}$ is matrix obtained from A by taking complex conjugate of each entry of A. **What is dimension of vector space of 2×2 Hermitian matrices over $\mathbb{R}$.**

Answer: 3 ✖

The correct answer is: 4

Question **4**

Correct

Mark 2.00 out of 2.00

What is the dimension of vector space of 5×5 real matrices with sum of entries of each row is zero?

Answer: 20 ✔

The correct answer is: 20

Question **5**

Incorrect

Mark 0.00 out of 1.00

True or False

Every upper triangular matrix is in a row echelon form!

Select one:

- True ✖
- False

The correct answer is 'False'.

Question **6**

Correct

Mark 2.00 out of 2.00

Choose the correct answer.

Suppose that B is a 3×3 matrix with the property that $B^2 = B$. Which of the following statements about the matrix B **MUST** be true.

- B is only the identity matrix.
- $(B^T)^2 = B^T$ ✔
- $|B| = 0$
- $|B| = 1$

The correct answer is: $(B^T)^2 = B^T$

Question **7**

Correct

Mark 1.00 out of 1.00

Select True or False:

True	False		
◉	○	Given u and v are solutions of AX = b then u + k(u - v) is also a solution of AX = b	✔

Given u and v are solutions of AX = b then u + k(u - v) is also a solution of AX = b: True

Question **8**

Correct

Mark 3.00 out of 3.00

Select True or False:

True	False		
◉	○	The system of equations 3x + 4y +5z = a; 4x + 5y + 6z = b; 5x + 6y + 7z = c are consistent only if a, b, c are in arithmetic progression	✔

The system of equations
3x + 4y +5z = a; 4x + 5y + 6z = b; 5x + 6y + 7z = c
are consistent only if a, b, c are in arithmetic progression: True

Question **9**

Correct

Mark 1.00 out of 1.00

Select True or False:

If a subspace of a real vector space contains a non-zero vector then it must be an infinite set.

Select one:

- True ✔
- False

The correct answer is 'True'.

Question **10**

Correct

Mark 2.00 out of 2.00

Drag the correct answer

For what value of k and a, b, c the given system has a unique solution

2x + y = a ; x + ky - z = b ; y +2z = c

k not equal to 0 and for all values of a , b , c ✔	k = 0 and for any value of a , b , c
k not equal to 0 and for a = b = c	k not equal to 0 and for any value of a not equal to b and c=1

The correct answer is:
Drag the correct answer

For what value of k and a, b, c the given system has a unique solution

2x + y = a ; x + ky - z = b ; y +2z = c

[k not equal to 0 and for all values of a , b , c]

Question **11**

Incorrect

Mark 0.00 out of 1.00

If a matrix A is non-singular, then there exists a nonzero matrix B such that AB is the zero matrix.

Select one:

- True ✖
- False

The correct answer is 'False'.

Question **12**

Correct

Mark 1.00 out of 1.00

Determine whether the following statement is True or False.

Set of vectors $\{(0,1),(1,1),(0,0)\}$ forms a basis of $\mathbb{R}^2$.

- False ✔
- True

The correct answer is: False

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