Started on	Sunday, November 6, 2022, 4:22 PM
State	Finished
Completed on	Sunday, November 6, 2022, 5:44 PM
Time taken	1 hour 21 mins
Points	8.00/13.50
Grade	**5.93** out of 10.00 (**59.26**%)

Question **1**

Correct

1.00 points out of 1.00

Suppose A is an invertible n x n matrix. Which of the following is NOT an equivalent statement?

Select one:

- The reduced row echelon form of A is I_n .
- A has nullity 0.
- The column vectors of A are linearly dependent. ✔
- The row vectors of A form a basis for R^n.
- The determinant of A is not zero.

Question **2**

Correct

0.50 points out of 0.50

If A is an m x n matrix, then the column space of A is a subspace of:

Select one:

- R
- R^{m-n}
- R^{mn}
- R^m ✔
- R^n

Question **3**

Correct

0.50 points out of 0.50

If A is an m x n matrix, then the row space of A is a subspace of:

Select one:

- R
- R^{m-n}
- R^{mn}
- R^{n} ✔
- R^{m}

Question **4**

Correct

0.50 points out of 0.50

Elementary row operations do not change the null space of a matrix.

Select one:

- True ✔
- False

Question **5**

Incorrect

0.00 points out of 0.50

Elementary row operations do not change the column space of a matrix.

Select one:

- True ✖
- False

Question **6**

Partially correct

1.00 points out of 1.50

Suppose A is an 8 x 7 matrix with rank 5. Then the rank of A^T is 5 ✔, the nullity of A is 2 ✔, and the nullity of A^T is 2 ✖.

Question **7**

Incorrect

0.00 points out of 1.00

What is the maximum rank of a 6 x 4 matrix?

Select one:

- 6 ✖
- 5
- 4
- 2
- 10

Question **8**

Correct

1.00 points out of 1.00

The general solution of $Ax = 0$ has 2 leading variables and 3 parameters. What is the rank of A ?

Select one:

- 1
- 5
- 6
- 3
- 2 ✔

Question **9**

Correct

1.50 points out of 1.50

What could be the size of the nullity of a 5 x 7 matrix?

Select one:

- Exactly 2
- More than 2
- Less than 2
- At least 2 ✔
- At most 2

Question **10**

Correct

1.00 points out of 1.00

Consider the matrix $A = \begin{bmatrix} 1 & 3 & 1 & 3 \\ 0 & 1 & 1 & 0 \\ -3 & 0 & 6 & -1 \\ 3 & 4 & -2 & 1 \\ 2 & 0 & -4 & -2 \end{bmatrix}$. Its rank is 3 ✔ and its nullity is 1 ✔.

Question **11**

Incorrect

0.00 points out of 2.50

Consider the set of vectors $S = \{(2,0,-4),(-3,0,6),(1,2,1),(-2,2,7),(4,4,-2)\}$ in R^3. Find a subset of these vectors that forms a basis for span(S).

Select one:

- { (2,0,-4), (-3,0,6) } ✖
- { (2,0,-4), (1,2,1) }
- { (1,2,1), (-2,2,7), (4,4,-2) }
- { (2,0,-4), (1,2,1), (-2,2,7), (4,4,-2) }
- { (2,0,-4), (-3,0,6), (1,2,1) }

Question **12**

Correct

0.50 points out of 0.50

If a matrix has more rows than columns, then its row space will have a larger dimension than its column space.

Select one:

- True
- False ✔

Question **13**

Correct

0.50 points out of 0.50

Elementary row operations do not change the row space of a matrix.

Select one:

- True ✔
- False

Question **14**

Incorrect

0.00 points out of 1.00

The general solution of $Ax = 0$ has 5 leading variables and 4 parameters. What is the nullity of A ?

Select one:

- 20
- 1
- 9 ✖
- 5
- 4

◄ (Sect. 4.8) Rank and Nullity of a Matrix

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