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Parker

Wednesday, October 26, 2022 9:07 AM

MTH 230 Exam #2 OL Accommodated

Submission Date

Wed, Oct 19, 2022 8:13 AM

Additional Instructions

Students may take the exam Thursday, 10/20 or Friday, 10/21

Accommodated Testing at the Brighton Campus - 6-207 > Accommodated Test - Brighton Campus - 6-207

2hr 15m

230Exam2F22.pdf

Student Name(s)

Madison Burke, Jacob Lee, Cory Parker, Anne Pyrak

is a Calculator allowed?

Yes - Basic, Yes - Scientific, Yes - Scientific Graphing

Professor Name

Kilner, Steve

What is the student allowed to bring into the test?

Scrap Paper/ Graph Paper

Completed Exam Return

Email Exam to Professor

Access Code Required?

Duration of Exam

90 min - 135m

Requested Date Window

Exam Completed

Friday, October 21, 2022 12:00 am

return (/monroecc/Professor)

Start: 10:57 am

End: 1:12 Pm

Actual: 12:38 pm

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12/13/22, 7:02 PM 1 of 8

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10/210 11Am

2hr 15m

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Wed, Oct 19, 2022 8:13 AM

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12/13/22, 7:02 PM 2 of 8

MTH 230 (Kilner) - Exam 2

Read all instructions on this coversheet before completing and submitting your exam.

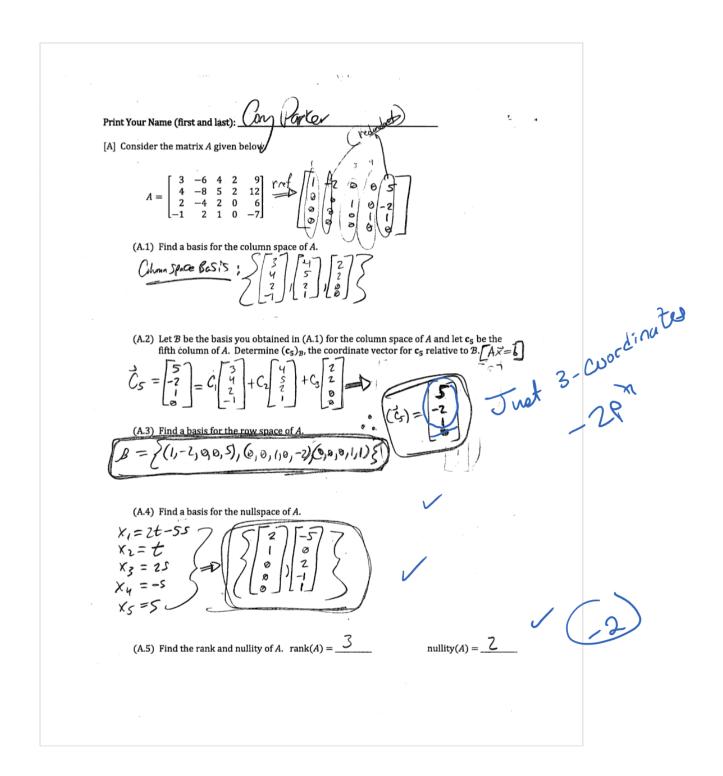
Failure to follow any of these directions may result in a penalty.

- You MAY use a calculator of any kind on this exam as long as it doesn't have internet capabilities (no cell phones). When using a calculator to perform row reductions and/or matrix operations, you must indicate on your paper, what you entered into the calculator as well as the result. In general show enough work to support your answers when appropriate.
- You may NOT access the textbook or any other resources (formula sheets, notes, websites, etc...) aside from a calculator. Treat this as you would a test that would be taken in a regular classroom, where you have nothing available to you other than the exam, paper to write on, and something to write with. Scrap paper is permitted.
- You may NOT obtain assistance from anyone in completing this exam.
- ***Anyone found violating any of the above rules will receive a 0 on the exam and will be reported to the appropriate offices at MCC.
- Only methods covered in this course up to the current unit may be used on this exam.
- Where appropriate you must show sufficient work to support your final answers. All such work must be done in this test booklet.

Make sure your name is on the next page.

You must show work to support your answers when appropriate.

You have up to 1 hour and 30 minutes to complete the exam.



- [B] Let B be a 7×9 matrix.
 - (B.1) What is largest possible value for rank(B)?



(B.2) Suppose that rank(B) = 5. Use this information and the fact that B is a 7×9 matrix to fill in the blanks below with the appropriate dimensions.

The dimension of the row space of B is: 5

The dimension of the column space of B is: 5

The dimension of the nullspace of B is: \Box

The dimension of the nullspace of R^T is:

[C] Determine whether or not the following collections of vectors are linearly independent or linearly dependent. Justify your answers.

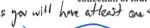
(C.1) $\{(1, -2, 5, 3), (3, -6, 15, 9)\}$ in the vector space \mathbb{R}^4 .





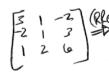
(C.2) $\{v_1,v_2,v_3,v_4\}$ in the vector space \mathbb{R}^3 . (your justification should apply for any Collection of four vectors in R3)
Linearly Dependent as you will have attend one true was all







(C.3) $\{x^2 - 2x + 3, 2x^2 + x + 1, 6x^2 + 3x - 2\}$ in the vector space \mathbb{P}_2 .







(Likerty Independent)

(Likerty Independent)

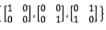
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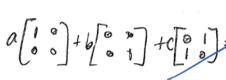
[D] Does the following set of 2×2 matrices form a basis for M_{22} ? VES NO (circle one)

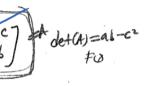


$$\begin{bmatrix}1&0\\0&0\end{bmatrix},\begin{bmatrix}0&0\\0&1\end{bmatrix},\begin{bmatrix}0&1\\1&0\end{bmatrix}\}$$



Justify your response.





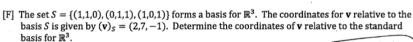
[E] Determine the dimensions of the following subspaces of \mathbb{R}^4 . No work is needed here.

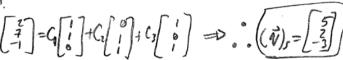
(E.1) all vectors of the form (a, b, c, 0)

Dimension: 3

(E.2) all vectors of the form (a, b, c, d), where a = b = c = d

(E.3) all vectors of the form (a, b, c, d), where d = a + b and c = a - b Dimension: 2







- [G] Consider the following bases for \mathbb{R}^2 : $\mathfrak{B} = \{(1,2), (2,3)\}$ and $\mathfrak{B}' = \{(-1,1), (-2,3)\}$.
 - (G.1) Find the transition matrix from \mathfrak{B}' to \mathfrak{B} which we denote $P_{\mathfrak{B}' \to \mathfrak{B}}$. Support your answer.

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[מ] המיוחדמה מוה זמונה ווווף המההה זמו שב י ה (לישוא) למואל) מיומי ה (ל ישואל) בי הואל.

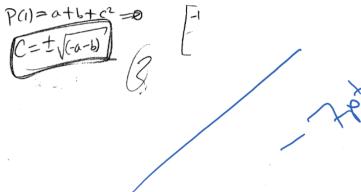
(G.1) Find the transition matrix from \mathfrak{B}' to \mathfrak{B} which we denote $P_{\mathfrak{B}' \to \mathfrak{B}}$. Support your answer.

(G.2) Let \mathbf{v} the vector in \mathbb{R}^2 whose coordinate vector relative to \mathfrak{B}' is: $(\mathbf{v})_{\mathfrak{B}'} = (5,4)$.

Determine the coordinate vector for \mathbf{v} relative to \mathfrak{B} (i.e. find $(\mathbf{v})_{\mathfrak{B}}$).

Express your answer as an ordered pair.

[H] Let W be the subspace of \mathbb{P}_2 consisting of all polynomials $p(x) = a + bx + cx^2$, which satisfy p(1) = 0. Obtain a basis for W and indicate the dimension of W.



Basis:

 $\dim(W) = \underline{\hspace{1cm}}$

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