Name:

Quiz 5

Changing Bases - Math 341 - Br. Woodruff— Due Wed July 7 - check solutions online, and correct your work

Take home quiz instructions:

Quizzes are to be done without help from any human being. You are allowed to your brain, a writing device, prayer, and the one page lesson plan you created yourself (no other notes, text, calculator, etc.). You should not discuss the contents of a quiz with anyone until after the due date. Quizzes are designed to be doable in 20-40 minutes or less, provided ample practice has been completed. You should complete the quiz in one continuous chunk of time (starting the quiz, and then coming back to it an hour later is not permitted). Once you have finished taking your quiz, if you know you have missed some problems then you can immediately begin quiz corrections. Make sure you place any corrections on another sheet of paper.

Quiz correction instructions:

I will grade quizzes and let you know which problems you got right or wrong. You are then responsible for finding your errors, explaining what mistakes you made, and correctly reworking incorrect solutions. You are allowed to use any resource you like to correct your work, though your submitted solutions must be your own work (plagiarism is considered cheating). You may submit quiz corrections at most twice. If you complete your quiz corrections on the first try within one week of the due date on the quiz, I will give you 1/2 of your points back on the original quiz score. Joining a study group which meets regularly will help you accomplish this each week. I provide lots of feedback on quiz corrections after your first attempt.

When submitting corrections, follow these rules:

1. Give a written explanation why what you submitted was incorrect. Be specific and explain exactly where and what mistake was made.

2. Correctly rework each problem for which you did not receive full credit. If you made a minor mistake, you do not need to rework the entire problem, just the portion where your mistake was made.

3. Submit your original work, unmodified, with your corrections stapled to the back. If you loose your original, you can print a new copy from the web. Submitted corrections should be clearly labeled and in ascending order (problem 1 should appear before problem 2).

A valuable part of the learning process is learning to find your own mistakes and figuring out how to fix them. When you discover that you have a made the same mistake on multiple problem, set a goal for how you plan to avoid making that mistake in the future.

Technology Instructions:

Your final assignment pertaining to each unit requires the use of Technology. Your assignment is to complete one of the projects from the book. You may begin on this project at any time. Your assignment is to complete the project within one week of the due date on this quiz. As you complete the project, you may find that you have the tools to solve any of the problems on the quiz as well. Feel free to use the computer to help you finish your corrections, just make sure you show by hand the needed work. The computer can help you know you got the problem correct.

The following box appears next to each problem, and is used to record grades.

Or	Your original score (out of 2 points)
C1	Your score after first correction (if needed)
C2	Your score after second correction (if needed)
WE	**W**ritten **E**xplanation why what you submitted was incorrect

Quiz 5

Orig.	Cor1	Bonus	Cor2.
/12		Correct by July 9	

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Estimated time to take:

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Show your work. Attach extra paper if needed, but please put your answers on this sheet.

Or	
C1	
C2	
WE	

1. The coordinates of $\vec{u}$ relative to the basis $S = \{(1,2),(3,5)\}$ are $[u]_S = [a,b]$. Find the coordinates of $\vec{u}$ relative to the basis $S' = \{(2,-3),(0,-1)\}$.

Or	
C1	
C2	
WE	

2. Consider the linear transformation $T(x,y,z) = (2x+y, x-3z)$, and bases $S = \{(1,0,0),(1,1,0),(0,0,1)\}$ and $S' = \{(1,2),(3,4)\}$. Consider the vector $\vec{u} = (2,3,-1)$. Find $[\vec{u}]_S, [T(\vec{u}]_{S'}$, and $[T]_{S,S'}$. Make sure you label what each vector is.

Or	
C1	
C2	
WE	

3. Find a basis S such that the matrix representation of $T(x,y) = (2x+4y, x+5y)$ is a diagonal matrix. Give the basis S and the diagonal matrix $[T]_S$.

Or	
C1	
C2	
WE	

4. Define the kernel of a linear transformation, and then show that the kernel of a linear transformation is a vector subspace of the domain.

Or	
C1	
C2	
WE	

5. Is the matrix $A = \begin{bmatrix} 2 & 1 & 1 \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}$ diagonalizable (the eigenvalues are 1,3,3)? Use the algebraic and geometric multiplicities of each eigenvalue to explain why or why not?

Or	
C1	
C2	
WE	

6. Find bases S and S' so that the matrix representation of $T(x,y,z) = (x+2y, 3z)$ relative to S and S' consists of all zeros and 1's, where the 1's occur on the diagonal of a sub matrix located in the upper left corner of the matrix.