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# Linear Algebra Midterm Exam Solutions

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 Intermediate Algebra Final Exam Review: Part 1 [fbt] (MATH 0314 –Developmental Math III) Zoom Midterm Exam | TTU MATH 2360-

D01-Linear Algebra, Summer 2020 Algebra 2 Midterm Exam Review [Live on 24th April, 2019 for Solutions of Linear Algebra Practice Test-1](#) [CSIR NET MATHEMATICS DECEMBER 2018 | Linear Algebra | Solutions of Section B \[Discrete Mathematics\] Midterm-2 Solutions](#) **CSIR NET Dec 2019 Full Solution (Sec-B) || Linear Algebra - Part 1 || By- Sunil Bansal** Linear Algebra—Lecture 5—Solutions to Linear Systems Algebra 2 Introduction, Basic Review, Factoring, Slope, Absolute Value, Linear, Quadratic Equations Linear Algebra Midterm Exam Solutions Linear Algebra 1 Instructor: Richard Taylor MIDTERM EXAM #1 SOLUTIONS 11 Feb 2016 11:30-12:45 Instructions: 1. Read the whole exam before beginning. 2. Make sure you have all 6 pages. 3. Organization and neatness count. 4. Justify your answers. 5. Clearly show your work. 6. You may use the backs of pages for calculations. 7. You may use an approved calculator. MATH 2120 Linear Algebra I MIDTERM EXAM #1 SOLUTIONS Solution. To show that the coordinate mapping is an isomorphism, we have to show that it is linear, one-to-one, and onto. For vectors  $x$  and  $y$  in  $V$ , let  $x = c_1b_1 + \dots + c_nb_n$  and  $y = d_1b_1 + \dots + d_nb_n$ . Then,  $[x]_B = (c_1; \dots; c_n)$  and  $[y]_B = (d_1; \dots; d_n)$ . Moreover,  $x+y = (c_1 + d_1)b_1 + \dots + (c_n + d_n)b_n$ , and  $[x+y]_B = (c_1 + d_1; \dots; c_n + d_n) = (c_1; \dots; c_n) + (d_1; \dots; d_n) = [x]_B + [y]_B$ : MA 242 LINEAR ALGEBRA C1, Solutions to Second Midterm Exam Linear Algebra Practice Midterm 1 Spring 2019 1. Let  $A = \begin{pmatrix} 2 & 3 & 3 & 1 & 4 & 1 & 13 & 5 \end{pmatrix}$  and consider the homogeneous system  $Ax = 0$ , where  $x \in \mathbb{R}^4$  and  $0 \in \mathbb{R}^2$ . (a) Compute  $\text{rref } A|0$ . Solution:  $\text{rref } A|0 = \begin{pmatrix} 1 & 0 & 3 & 1 & 0 & 0 & 1 & 1 & 1 & 0 \end{pmatrix}$  (b) Identify the pivot columns  $b_j$  in  $B = \text{rref } A|0$ . Solution: Let  $B = \text{rref } A|0$ . Then the pivot columns of  $B$  are  $b_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$  and  $b_2 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$  Linear Algebra Practice Midterm 1 - Department of Mathematics Linear Algebra

Midterm Exam Solutions Author:

[embraceafricagroup.co.za-2020-11-16T00:00:00+00:01](mailto:embraceafricagroup.co.za-2020-11-16T00:00:00+00:01) Subject: Linear Algebra Midterm Exam Solutions Keywords: linear, algebra, midterm, exam, solutions Created Date: 11/16/2020 3:28:36 PM Linear Algebra Midterm Exam Solutions MATH15a: Linear Algebra Exam 1, Solutions 1. Let  $T: \mathbb{R}^3 \rightarrow \mathbb{R}^4$  be the linear transformation with  $T(\tilde{e}_1) = 2\tilde{e}_1 + \tilde{e}_2 + 3\tilde{e}_3 - 4\tilde{e}_4$ ,  $T(\tilde{e}_2) = \tilde{e}_1 - \tilde{e}_2 + 2\tilde{e}_3 + 6\tilde{e}_4$ , and  $T(\tilde{e}_3) = 4\tilde{e}_1 - \tilde{e}_2 + 7\tilde{e}_3 + 8\tilde{e}_4$ . (a) (6 points) Write the standard matrix for  $T$ . Denote this matrix  $A$ . Answer: Since it's a transformation  $\mathbb{R}^3 \rightarrow \mathbb{R}^4$ , the matrix needs to be  $4 \times 3$ . MATH15a: Linear Algebra Exam 1, Solutions Linear Algebra I Instructor: Richard Taylor MIDTERM EXAM #2 SOLUTIONS 20 March 2014 11:30-12:45 Instructions: 1. Read the whole exam before beginning. 2. Make sure you have all 5 pages. 3. Organization and neatness count. 4. Justify your answers. 5. Clearly show your work. 6. You may use the backs of pages for calculations. 7. You may use an approved calculator. MATH 2120 Linear Algebra I MIDTERM EXAM #2 SOLUTIONS Linear Algebra Midterm 1 PRINT NAME: SIGNATURE: INSTRUCTIONS: For problem 1 - 10 circle only one answer. Your answer should be legible and clear, if not, no points will be awarded. Problem 11 and 12 require you to show detailed work leading to the answer. Points will be deducted for incomplete justification of the answers. Linear Algebra Midterm 1I sometimes solve and post a solution/proof of an exam (midterm, final, qualifying, entrance, etc.) problem given at various universities. Here is the list of the universities where I borrowed problems and post solutions. Linear Algebra Exam Problems | Problems in Mathematics Don't show me this again. Welcome! This is one of

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 (b) (5 points) Find all solutions to the system of linear equations  $-4x + 5z = -2$   $-3x - 3y + 5z = 3$   $-x + 2y + 2z = -1$  Answer: This system is  $A\vec{x} = \vec{b}$ , where  $A$  is as in the previous part and  $\vec{b} = \begin{bmatrix} -2 \\ 3 \\ -1 \end{bmatrix}$ . Hence  $\vec{x} = A^{-1}\vec{b} = \begin{bmatrix} -4 & 10 & -15 \\ 1 & -3 & 5 \\ -3 & 8 & -12 \end{bmatrix} \begin{bmatrix} -2 \\ 3 \\ -1 \end{bmatrix} = \begin{bmatrix} 53 \\ -16 \\ 42 \end{bmatrix}$ .  
 4.MATH15a: LinearAlgebra PracticeFinal Exam, SolutionsFile Type PDF Linear Algebra Midterm Exam Solutions the soft file of the book. Taking the soft file can be saved or stored in computer or in your laptop. So, it can be more than a photograph album that you have. The easiest showing off to announce is that you can along with save the soft file of linear algebra midterm exam solutions in your conventional andLinear Algebra Midterm Exam Solutions - 1x1px.meMidterm 1 Solutions, MATH 54, Linear Algebra and Differential Equations, Fall 2014 Name (Last, First): Problem 4) (10 points) Let  $P_2$  be the vector space of polynomials

of degree less than or equal to 2. Let  $B$  be the basis  $b_1 = x^2; b_2 = 1 + x; b_3 = x + x^2$ . Find the coordinates of the vector  $v = 1 + 2x + x^2$  with respect to  $B$ .Name (Last, First): Student ID: Circle your sectionThe solutions will be given after completing all problems. (The Ohio State University, Linear Algebra Exam) The Possibilities For the Number of Solutions of Systems of Linear Equations that Have More Equations than Unknowns Determine all possibilities for the number of solutions of each of the system of linear equations described below. (a) A system of 5 equations in 3 unknowns and it has  $x_1=0, x_2=-3, x_3=1$  as a solution.Linear Algebra Midterm 1 at the Ohio State University (1/3 ... (6 pts) The possible numbers of solutions are 0 or 1. The linear system has augmented matrix  $[A : c]$ . If you do the row operations which take  $A$  to RREF, the number of solutions will depend on what happens to  $c$ . If the result has a 0 in the 4th entry, there will be 1 solution.Linear Algebra - Exam 1 Solutions - OU MathSolution: The characteristic polynomial is  $(4 - \lambda)^2(2 - \lambda)^2$ , so the eigenvalues are 4,2, each with multiplicity 2. The matrix will therefore be diagonalizable if each eigenspace has dimension 2.  $A - 2I, A - 4I$  each have rank 2, so the nullspaces have the required dimension.NameForward elimination changes  $Ax = b$  to a row reduced  $Rx = d$ : the complete solution is  $\begin{bmatrix} 4 & 2 & 5 \\ 0 & 0 & 0 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} + c_1 \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} + c_2 \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}$  (a)(14 points)What is the 3 by 3 reduced row echelon matrix  $R$  and what is  $d$ ?Quiz 1 March 1, 2010 Professor Strang - MIT OpenCourseWarelinear-algebra-midterm-exam-solutions 1/6 Downloaded from datacenterdynamics.com.br on October 27, 2020 by guest [Book] Linear Algebra Midterm Exam Solutions This is likewise one of the factors by obtaining the soft

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### **MATH 2120 Linear Algebra I MIDTERM EXAM #2 SOLUTIONS**

Linear Algebra Midterm 1 PRINT NAME: SIGNATURE:

INSTRUCTIONS: For problem 1 - 10 circle only one answer. Your answer should be legible and clear, if not, no points will be awarded. Problem 11 and 12 require you to show detailed work leading to the answer. Points will be deducted for incomplete justification of the answers.

#### **Linear Algebra Midterm Exam Solutions**

Linear Algebra 1 Instructor: Richard Taylor MIDTERM EXAM #1 SOLUTIONS 11 Feb 2016 11:30{12:45 Instructions: 1. Read the whole exam before beginning. 2. Make sure you have all 6 pages. 3. Organization and neatness count. 4. Justify your answers. 5. Clearly show your work. 6. You may use the backs of pages for calculations. 7. You may use an approved calculator.

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(b) (5 points) Find all solutions to the system of linear equations  $-4x + 5z = -2$   $-3x - 3y + 5z = 3$   $-x + 2y + 2z = -1$  Answer: This system is  $A\tilde{x} = \tilde{b}$ , where  $A$  is as in the previous part and  $\tilde{b} = \begin{bmatrix} -2 \\ 3 \\ -1 \end{bmatrix}$ . Hence  $x \ y \ z = A^{-1}\tilde{b} = \begin{bmatrix} -4 \\ 10 \\ -15 \end{bmatrix} \begin{bmatrix} 1 \\ -3 \\ 5 \end{bmatrix} \begin{bmatrix} -3 \\ 8 \\ -12 \end{bmatrix} \begin{bmatrix} -2 \\ 3 \\ -1 \end{bmatrix} = \begin{bmatrix} 53 \\ -16 \\ 42 \end{bmatrix}$ . 4.

#### **Linear Algebra Midterm 1**

Linear Algebra Practice Midterm 1 Spring 2019 1. Let  $A = \begin{bmatrix} 2 & 3 & 3 & 1 \end{bmatrix}$

$\begin{bmatrix} 4 & 1 & 13 & 5 \end{bmatrix}$  and consider the homogeneous system  $Ax = 0$ , where  $x \in \mathbb{R}^4$  and  $0 \in \mathbb{R}^2$ . (a) Compute  $\text{rref } A_j 0$ . Solution:  $\text{rref } A_j 0 = \begin{bmatrix} 1 & 0 & 3 & 1 & 0 \\ 0 & 1 & 1 & 1 & 0 \end{bmatrix}$  (b) Identify the pivot columns  $b_j$  in  $B = \text{rref } A_j 0$ .

Solution: Let  $B = \text{rref } A_j 0$ . Then the pivot columns of  $B$  are  $b_1 = \begin{bmatrix} 1 \\ 0 \end{bmatrix}$  and  $b_2 = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$

*Name (Last, First): Student ID: Circle your section*

MATH15a: Linear Algebra Exam 1, Solutions 1. Let  $T: \mathbb{R}^3 \rightarrow \mathbb{R}^4$  be the linear transformation with  $T(\tilde{e}_1) = 2\tilde{e}_1 + \tilde{e}_2 + 3\tilde{e}_3 - 4\tilde{e}_4$ ,  $T(\tilde{e}_2) = \tilde{e}_1 - \tilde{e}_2 + 2\tilde{e}_3 + 6\tilde{e}_4$ , and  $T(\tilde{e}_3) = 4\tilde{e}_1 - \tilde{e}_2 + 7\tilde{e}_3 + 8\tilde{e}_4$ . (a) (6 points) Write the standard matrix for  $T$ . Denote this matrix  $A$ . Answer: Since it's a transformation  $\mathbb{R}^3 \rightarrow \mathbb{R}^4$ , the matrix needs to be  $4 \times 3$ . It

*Name*

Exam solutions is absolutely amazing. Stuart explains everything clearly and with great working. Without Exam solutions A-Level maths would have been much, much harder. I have relied on Exam solutions throughout A-Level maths and have found it extremely helpful in consolidating my mathematical knowledge. *Exam Solutions Maths Revision Tutorials, Papers and Solutions* (6 pts) The possible numbers of solutions are 0 or 1. The linear system has augmented matrix  $[A : c]$ . If you do the row operations which take  $A$  to RREF, the number of solutions will depend on what happens to  $c$ . If the result has a 0 in the 4th entry, there will be 1 solution.

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*Determinants 111 Linear Algebra True False Questions Midterm 1*  
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Elimination with Matrices | MIT 18.06SC Linear Algebra, Fall 2011  
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 Dimension \u0026 Rank, Null \u0026 Column Space [The Big](#)  
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**Subspace Example #1**

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 Review, Factoring, Slope, Absolute Value, Linear, Quadratic  
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**MATH15a: LinearAlgebra Exam 1,Solutions**

Forward elimination changes  $Ax = b$  to a row reduced  $Rx = d$ : the  
 complete solution is  $\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 4 - 2x_2 + 5x_3 \\ x_2 \\ x_3 \end{bmatrix} + c_1 \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} + c_2 \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}$  (a)(14  
 points)What is the 3 by 3 reduced row echelon matrix R and what

is d?

### Linear Algebra Midterm Exam Solutions

Solution: The characteristic polynomial is  $(4 - \lambda)^2(2 - \lambda)^2$ , so the eigenvalues are 4, 2, each with multiplicity 2. The matrix will therefore be diagonalizable if each eigenspace has dimension 2.  $A - 2I$ ,  $A - 4I$  each have rank 2, so the nullspaces have the required dimension.

**[Linear Algebra] Linear Systems Exam Solutions Linear Algebra | Mid-term Exam Solutions, Spring 2018 Linear Algebra | Mid-term Exam Solutions, WS 2018 Linear Algebra Final Review (Part 1) || Transformations, Matrix Inverse, Cramer's Rule, Determinants 111 Linear Algebra True False Questions Midterm 1 True False Easy/Medium/Hard [Passing Linear Algebra] Linear Algebra Test from 1982 Versus 2006**

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**Elimination with Matrices | MIT 18.06SC Linear Algebra, Fall 2011 Linear Algebra Final Review (Part 2) || Change of Basis, Dimension Rank, Null Column Space The Big Picture of Linear Algebra Linear Algebra Example Problems - Subspace Example #1**

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I sometimes solve and post a solution/proof of an exam (midterm, final, qualifying, entrance, etc.) problem given at various universities. Here is the list of the universities where I borrowed problems and post solutions.

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Clearly show your work. 6. You may use the backs of pages for calculations. 7. You may use an approved calculator.

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[MA 242 LINEAR ALGEBRA C1, Solutions to Second Midterm Exam](#)  
 Solution. To show that the coordinate mapping is an isomorphism, we have to show that it is linear, one-to-one, and onto. For vectors  $x$  and  $y$  in  $V$ , let  $x = c_1b_1 + \dots + c_nb_n$  and  $y = d_1b_1 + \dots + d_nb_n$ . Then,  $[x]_B = (c_1; \dots; c_n)$  and  $[y]_B = (d_1; \dots; d_n)$ . Moreover,  $x + y = (c_1 + d_1)b_1 + \dots + (c_n + d_n)b_n$ , and  $[x + y]_B = (c_1 + d_1; \dots; c_n + d_n) = (c_1; \dots; c_n) + (d_1; \dots; d_n) = [x]_B + [y]_B$ .