

# Unique Solution Linear Algebra

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### **Unique Solution Linear Algebra**

What Is a Unique Solution in Linear Algebra?. Part of the series: Algebra Tips. In mathematical terminology a "unique solution" is defined in a very specific...

### **What Is a Unique Solution in Linear Algebra? - YouTube**

"If The system has a unique solution, It has independent set of Equations" ... linear-algebra systems-of-equations. share | cite | improve this question | follow | edited Oct 1 '19 at 4:57. Atinesh.

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asked Dec 30 '14 at 18:20. Atinesh Atinesh. 959 4 4 gold badges  
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## linear algebra - Understanding the meaning of Unique ...

Linear algebra is the study of linear sets of equations and its transformation properties. Know more about linear algebra functions, applications with solved examples at BYJU'S. ...

Example: Show that the function  $L : \mathbb{R}^2 \rightarrow \mathbb{R}^3$  given by

$$L(x) = \begin{pmatrix} x_1 + 4x_2 \\ 3x_1 - x_2 \\ x_2 \end{pmatrix}$$

is linear. Solution: For any  $x, y \in \mathbb{R}^2$  ...

## Linear Algebra Introduction | Equations, Applications ...

For example:  $Q = \begin{pmatrix} 1 & 1 & 1 & 1 \end{pmatrix}$ , then  $\det |I - Q| = -1$ . Next, if  $Q = \begin{pmatrix} 2 & -2 & 1 & -1 \end{pmatrix}$  then both  $\det |Q| = 0$  and  $\det |I - Q| = 0$ . In general if  $Q = \begin{pmatrix} a & b & c & d \end{pmatrix}$   $\det |Q| = 0$   $a d = b c$  (1) Then  $\det |I - Q| = 0$   $1 - a - d + a d = b c$  (2) So (1) and (2) imply that.

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### **Unique solution for a system of linear equations ...**

Put simply, a linear system has a unique solution if and only if its matrix representation has trivial kernel. This is not super obvious, so I will prove it.

### **What does it mean that a linear system has a unique ...**

Has a unique solution except when  $b = 0$  and  $b = 6$ . If  $b = 0$ , show that there is only one value for  $a$  for which a solution exists, and find the general solution in this case. Discuss the case when  $b = 6$ . Interpret your solutions in terms of the kernel and image of the linear transformation  $T: \mathbb{R}^3 \rightarrow \mathbb{R}^3$  represented by the equations.

### **Linear Transformations - Unique Solutions**

Linear Algebra Help » Linear Equations » Criteria for Uniqueness and Consistency Example Question #1 : Criteria For Uniqueness

And Consistency Possible Answers:

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### **Criteria for Uniqueness and Consistency - Linear Algebra**

If the system has no solution, the bottom row will be  $0 \ 0 \ 0 \ k$  where  $k \neq 0$ . Hence,  $a - 4 = 0$ ,  $b - 1 \neq 0$ . If the system has a unique solution, every row in the coefficient matrix  $A$  has a pivot.

### **Linear Algebra Unique Solutions? | Yahoo Answers**

A system of linear equations can have no solution, a unique solution or infinitely many solutions. A system has no solution if the equations are inconsistent, they are contradictory. For example  $2x+3y=10$ ,  $2x+3y=12$  has no solution. This is the rref form of the matrix for this system.

### **The three types of solution sets: - Texas A&M University**

Learning Objectives¶. By the end of this section you should be able to: Understand the difference between unique solutions, no solutions, and infinitely many solutions.

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## **Unique Solution, No Solution, or Infinite Solutions ...**

Basically, consider each row of the matrix as a vector (Equivalently, each column). If the set of vectors is linearly independent (forms a basis), then the matrix equation  $Ax = b$  has a unique solution. Intuitively, is because, by forming a basis, you can express  $b$  as some linear combination of the basis.

## **How to tell if a matrix equation has a unique solution - Quora**

G. NAGY - LINEAR ALGEBRA July 15, 2012 III 4.4.2. Vector components in a basis 131 4.4.3. Exercises 136 Chapter 5. Linear transformations 137 5.1.

## **LINEAR ALGEBRA**

$r=n$  and the solution is unique. It can be read off directly from the entries in rows 1 through  $n$  of column  $n+1$ .  $r<n$  and

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there are infinitely many solutions. If only a single solution is needed, set all the free variables to zero and read off the dependent variable values from column  $n+1$ , as in the second half of the proof of Theorem RCLS. If the entire solution set is required, figure out some nice compact way to describe it, since your finite computer is not big enough to hold all ...

### **A First Course in Linear Algebra**

Condition for Unique Solution to Linear Equations. A system of linear equations  $ax + by + c = 0$  and  $dx + ey + g = 0$  will have a unique solution if the two lines represented by the equations  $ax + by + c = 0$  and  $dx + ey + g = 0$  intersect at a point. i.e., if the two lines are neither parallel nor coincident. Essentially, the slopes of the two lines should be different.

### **System of Linear Equations | No Unique solution | GMAT**

...

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Even more remarkable is that every solution can be written as a linear combination of these solutions. Therefore, if we take a linear combination of the two solutions to Example [exa:basicsolutions], this would also be a solution. For example, we could take the following linear combination (1.5.16)  $3 \begin{bmatrix} -4 & 1 & 0 \end{bmatrix} + 2 \begin{bmatrix} -3 & 0 & 1 \end{bmatrix} = \begin{bmatrix} -18 & 3 & 2 \end{bmatrix}$

### **1.5: Rank and Homogeneous Systems - Mathematics LibreTexts**

Unique Solution. There is a unique solution to a system of equations exactly when zero free variables are present. This is identical to requiring that the number of variables equal the number of lead variables, or  $\text{rank} = n$ .

### **Unique solution Missing variable Zero equations**

The blue line is the common solution to two of these equations. Linear algebra is the branch of mathematics concerning linear



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equations such as:  $a_1 x_1 + \dots + a_n x_n = b$ , linear maps such as:

### **Linear algebra - Wikipedia**

Linear algebra From Wikipedia, the free encyclopedia In three-dimensional Euclidean space, these three planes represent solutions of linear equations, and their intersection represents the set of common solutions: in this case, a unique point. The blue line is the common solution to two of these equations.

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