7. Nullspace

Here is what happens in general for homogeneous linear systems:

Recall that the set of all solutions to a homogeneous linear system $\mathbf{Ax} = \mathbf{0}$ is called the **nullspace of matrix** $\mathbf{A}$, and is denoted $\mathbf{NS(A)}$.

Theorem 7.1 If $\mathbf{A}$ is a matrix, then the set of all solutions to the homogeneous linear system $\mathbf{Ax} = \mathbf{0}$ is a vector space. (In other words if $\mathbf{A}$ is an $m \times n$ matrix, then the nullspace $\mathbf{NS(A)}$ is a subspace of $\mathbb{R}^n$.)

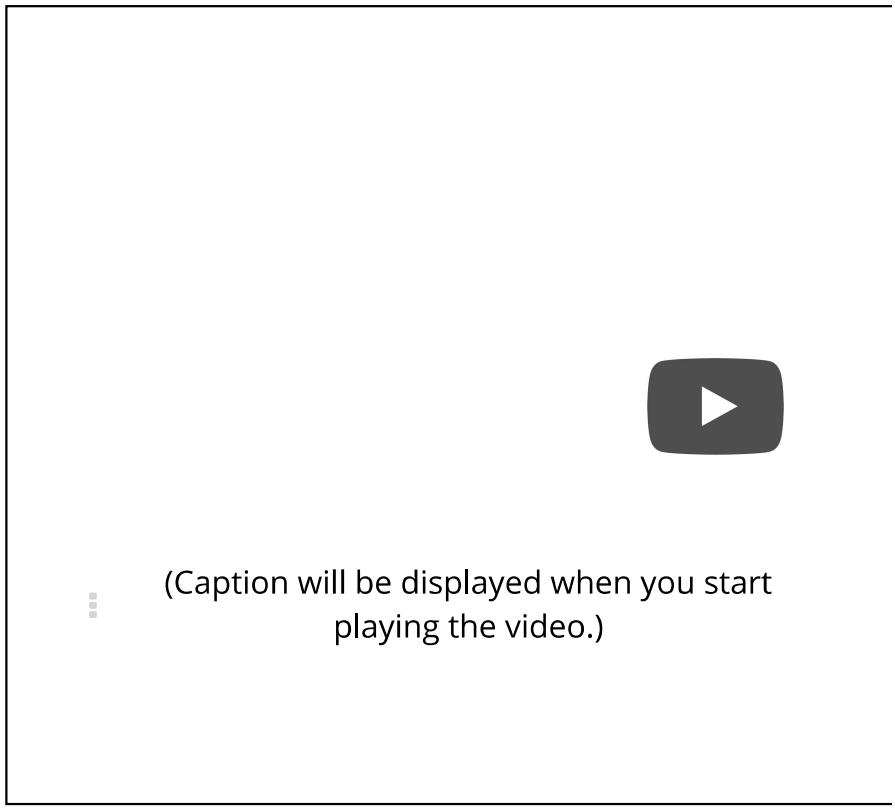
Analogous theorem : If $P(D)$ is a linear differential operator, then the set of solutions to the homogeneous ODE $P(D)\,x = 0$ is a vector space of functions. (It is a subspace of the set of all functions.)

Proof of theorem

Show

Example of nullspace by inspection

Start of transcript. Skip to the end.



So I'm talking about the-- again the null space and let me copy

again the matrix by column: 1, 2, 3, 4--

1, 1, 1, 1--

and 2, 3, 4, 5.

What's in the null space?

So I'm taking A times x.

So let me write it again.

And I want you to solve

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audio of video 1

hi, the audio of the video has both mics on, the audience's and the professor's. It's one per ear, so no...

Typo in the text 2

Hi! There is a typo in the Proof of theorem "1. If is in the nullpsace, this means that...". Just fyi

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