2. Find the dimension of the nullspace

Find the dimension of the nullspace (External resource)

(1.0 points possible)

Find the dimension of the nullspace using null( )

In this problem, we will find the nullspace and the dimension of the matrix defined below.

```
A = [0.9653    0.0345    0.8963   -0.8830   -0.4327    0.9822    1.3811;
    -0.4002   -0.3695    0.3388   -0.7290   -0.0606   -1.3775    0.6377;
     0.6734   -0.2631    1.1996    0.6106    0.1278    0.7653    0.4537;
     0.9755   -0.2065    1.3885    0.4758    0.5416    0.1616    1.2478;
     0.2546   -0.4360    1.1266    0.8531   -0.7262    2.1241   -0.8887;
     0.1431   -0.8431    1.8293   -0.7305   -0.5756   -0.2793    1.1411;
    -0.2426    0.3752   -0.9930    0.9713   -0.0005    1.1049   -1.5896;
     0.5974   -0.6121    1.8216    0.0908   -0.5123    1.1007    0.6064];
```

Create a matrix $\mathbf{N}$ whose columns form a basis for the nullspace of $\mathbf{A}$ by checking the documentation on the use of the matlab command

```
null(  )
```

and create a variable

```
dim
```

whose value is the dimension of the nullspace.

Finally, create a new matrix $\mathbf{B} = \mathbf{AN}$. Is the matrix $\mathbf{B}$ a matrix of zeroes? Why or why not? Discuss what zero means numerically in the discussion forum.

Your Script

Save Reset MATLAB Documentation (https://www.mathworks.com/help/)

```
%Copy and past the matrix A (using cmd-c cmd-v on mac and ctrl-c ctrl-v on pc),
%and find the dimension of its nullspace
%You must create a matrix N and variable dim as described above.
A = [0.9653    0.0345    0.8963   -0.8830   -0.4327    0.9822    1.3811;
    -0.4002   -0.3695    0.3388   -0.7290   -0.0606   -1.3775    0.6377;
     0.6734   -0.2631    1.1996    0.6106    0.1278    0.7653    0.4537;
     0.9755   -0.2065    1.3885    0.4758    0.5416    0.1616    1.2478;
     0.2546   -0.4360    1.1266    0.8531   -0.7262    2.1241   -0.8887;
     0.1431   -0.8431    1.8293   -0.7305   -0.5756   -0.2793    1.1411;
    -0.2426    0.3752   -0.9930    0.9713   -0.0005    1.1049   -1.5896;
     0.5974   -0.6121    1.8216    0.0908   -0.5123    1.1007    0.6064];
N = null(A)
dim = size(N, 2)
B = A * N


%Finally, look at B = A*N. Is this a matrix of zeroes? Why or why not?
```

```
%Note that numerically, values close to zero should be assumed to be equal to zero
%But why is it not an exact equality?
```

▶ Run Script ()

Output

2. Find the dimension of the nullspace

Hide Discussion

Topic: Unit 1: Linear Algebra, Part 1 / 2. Find the dimension of the nullspace

Add a Post

Show all posts ▼ by recent activity ▼

?	'Dim' is not working out! It says I have all but the dimensions of N. I keep getting a 7x3 matrix for N, which is wrong. But A is co...	3
💬	What is matrix B and what's zero got to do with it?	2
💬	What zero means numerically Numerically zero is often approximated with a small decimal value? However, `B` would be exactly z...	6
💬	(null,'r') Have you tried the optional argument 'r' ? I thought it would solve the rounding issue but that's not t...	2
💬	Is there a function ... in MATLAB to tell you how many columns are in a given matrix?	3
?	Unable to copy A I tried in 2 different browsers to copy and paste A to the the Script box, but no success. Any suggesti...	8

Learn About Verified Certificates