Programming with Matlab

Group 11

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Introduction

In this presentation, we will be discussing:

- Determinant
- Trace
- Rank
- Inverse
- Condition Number and
- Pseudoinverse

of a matrix A. The test matrix we will be using is A $= \begin{pmatrix} 3 & 5 \\ 7 & 6 \end{pmatrix}$

Determinant

The det function computes the determinant of square matrix.

```
>> D = det(A);
D =
17
```

Trace

The trace function computes the sum of the diagonal elements (trace) of the matrix.

```
>> T = trace(A);
T =
9
```

Rank

The rank returns the rank of a matrix (ie. The maximal number of linearly independent columns (or rows) in a matrix).

```
>> R = rank(A);
R =
2
```

Inverse

The inv function computes the inverse of square matrix.

```
>> I = inv(A);
I =
      -6/17           5/17
      7/17          -3/17
```

Condition Number

The cond function returns the 2-norm condition number for inversion, equal to the ratio of the largest singular value of A to the smallest

```
>> C = cond(A);
C =
6.8541
```

Pseudoinverse

The pinv function returns the Moore-Penrose Pseudoinverse (a generalization of inverse unto $\mathbb{C}$) of a matrix

```
>> P = pinv(A);
  P =
    -6/17           5/17
    7/17          -3/17
```

Danke je!