The determinant of a 5x5 matrix

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Abstract

In this paper, I describe the determinant of a 5x5 matrix.
The paper ends with "The End"

Introduction

Determinants of matrices are useful to solve linear systems.
In this paper, I describe the determinant of a 5x5 matrix.

The determinant of a 5x5 matrix

The determinant of a 5x5 matrix

$$M = \begin{pmatrix} a & b & c & d & e \\ f & g & h & i & j \\ k & l & m & n & o \\ p & q & r & s & t \\ u & v & w & x & y \end{pmatrix}$$

is

$$|M| = eimqu - djmqu - ehnqu + cjnqu + dhoqu - cioqu - eilru + djlru + egnru - bjnru - dgoru + bioru + ehlsu - cjlsu - egmsu + bjmsu + cgosu - bhosu - dhltu + ciltu + dgmtu - bimtu - cgntu + bhntu - eimpv + djmpv + ehnpv - cjnpv - dhopv + ciopv + eikrv - djkrv - efnrv + ajnrv + dforv - aiorv - ehksv + cjksv + efmsv - ajmsv - cfosv + ahosv + dhktv - ciktv - dfmtv + aimtv + cfntv - ahntv + eilpw - djlpw - egnpw + bjnpw + dgopw - biopw - eikqw + djkqw + efnqw - ajnqw - dfoqw + aioqw + egksw - bjksw - eflsw + ajlsw + bfosw - agosw - dgktw + biktw + dfltw - ailtw - bfntw + agntw - ehlpx + cjlpx + egmpx - bjmpx - cgopx + bhopx + ehkqx - cjkqx - efmqx + ajmqx + cfoqx - ahoqx - egkrx + bjkrx + eflrx - ajlrx - bforx + agorx + cgktx - bhktx - cfltx + ahltx + bfmtx - agmtx + dhlpy - cilpy - dgmpy + bimpy + cgnpy - bhnpy - dhkqy + cikqy + dfmqy - aimqy - cfnqy + ahnqy + dgkry - bikry - dflry + ailry + bfnry - agnry - cgksy + bhksy + cflsy - ahlsy - bfmsy + agmsy$$

The End