Determinant Formulas

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1   2x2 Determinant

For a 2×2 matrix:

$$A = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$$

The determinant is:

$$\det(A) = ad - bc$$

This is standard and implimented directly in the det2by2 funtion.

2   Recursive Definition

Standard for math but terrible computational efficiency, when I tried to implement it before I accidentally assumed 3x3 matrix, so going to fix it recoursively.

For an $N \times N$ matrix A:

$$\det(A) = \sum_{j=0}^{N-1} (-1)^j a_{0j} \det(M_{0j})$$

where M_{0j} is the minor formed by removing row 0 and column j.