The Inverse and Determinants of 2x2 and 3x3 Matrices

For those people who need instant formulas!
The general way to calculate the inverse of any square matrix, is to append a unity matrix after the matrix (i.e. [A | I]), and then do a row reduction until the matrix is of the form [I | B], and then B is the inverse of A. There is also a general formula based on matrix conjugates and the determinant. In the following, DET is the determinant of the matrices at the left-hand side.

The inverse of a 2x2 matrix:

$$\begin{vmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{vmatrix}^{-1} = 1/DET * \begin{vmatrix} a_{22} & -a_{12} \\ -a_{21} & a_{11} \end{vmatrix}$$

with DET $= a_{11}a_{22}-a_{12}a_{21}$

The inverse of a 3x3 matrix:

$$\begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{vmatrix}^{-1} = 1/DET * \begin{vmatrix} a_{33}a_{22}-a_{32}a_{23} & -(a_{33}a_{12}-a_{32}a_{13}) & a_{23}a_{12}-a_{22}a_{13} \\ -(a_{33}a_{21}-a_{31}a_{23}) & a_{33}a_{11}-a_{31}a_{13} & -(a_{23}a_{11}-a_{21}a_{13}) \\ a_{32}a_{21}-a_{31}a_{22} & -(a_{32}a_{11}-a_{31}a_{12}) & a_{22}a_{11}-a_{21}a_{12} \end{vmatrix}$$

with DET $= a_{11}(a_{33}a_{22}-a_{32}a_{23})-a_{21}(a_{33}a_{12}-a_{32}a_{13})+a_{31}(a_{23}a_{12}-a_{22}a_{13})$

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