

A is a 3 by 3 matrix.

$$A = \begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}$$

The inverse is

$$A^{-1} = \frac{1}{\Gamma} \begin{bmatrix} (ei - fh) & (ch - bi) & (bf - ce) \\ (fg - di) & (ai - cg) & (cd - af) \\ (dh - eg) & (bg - ah) & (ae - bd) \end{bmatrix}$$

The determinate is

$$\Gamma = aei - afh - bdi + bfg + cdh - ceg$$