

# Matrices

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The *characteristic polynomial*  $\chi(\lambda)$  of the  $3 \times 3$  matrix

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

is given by the formula

$$\chi(\lambda) = \begin{vmatrix} \lambda - a & -b & -c \\ -d & \lambda - e & -f \\ -g & -h & \lambda - i \end{vmatrix}.$$

$$\begin{vmatrix} a & b \\ c & d \\ e & f \end{vmatrix}$$