Inverse of a Square Matrix

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- $\mathbf{A} \cdot \mathbf{A}^{-1} = \mathbf{I}$
- If a two by two matrix is given, and the entries are $\mathbf{A} = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$, then the inverse is $\mathbf{A}^{-1} = \frac{1}{ad-bc} \begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$
- Some matrices may be non-invertible (proven if a row of zeros is obtained)
- $(\mathbf{AB})^{-1} = \mathbf{B}^{-1}\mathbf{A}^{-1}$
- $(\mathbf{A}^{-1})^{-1} = \mathbf{A}$
- $(\mathbf{A}^k)^{-1} = \mathbf{A}^{-1} \cdot \mathbf{A}^{-1} \cdot \mathbf{A}^{-1} \cdots = (\mathbf{A}^{-1})^k$
- $(c\mathbf{A})^{-1} = \frac{1}{c}\mathbf{A}^{-1}$
- $(\mathbf{A}^T)^{-1} = (\mathbf{A}^{-1})^T$