matrix condition number is greater or equal to 1

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Theorem 1. *The matrix condition number is greater or equal* 1.

Proof. Let A be a square matrix. Then by properties of a matrix norm,

$$1 = ||\,I\,|| = ||\,AA^{-1}\,|| \leq ||\,A^{-1}\,||||\,A\,||.$$

$\square$