A matrix norm is a way of measuring the numerical “size” or “magnitude” of a matrix. There is no exact formula for calculating a matrix norm, since all that is needed for a matrix norm formula to be valid is to for the formula to have the following properties:

llαAll = lαl llAll

llA + Bll = llAll + llBll

llAll >= 0

llAll = 0 iff A = 0m,n

Thus, there can be many candidates for valid matrix norms. An induced matrix norm is a norm formula based off how much larger a vector gets when the matrix is operated on the vector. (The matrix acts as a linear operator on the vector). For example, 3 vector norms include the 1-norm, 2-norm, and infinity-norm, and each one of these vector-norms has a corresponding induced matrix norm.

Sources used.

<https://en.wikipedia.org/wiki/Matrix_norm>

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