(8) The formula $AB = BA$ holds for all $n \times n$ matrices A and B.

T F

rarely

(9) If the vectors $\vec{v}_1, \vec{v}_2, \ldots, \vec{v}_n$ are linearly independent in $\mathbb{R}^n$ then they must form a basis for $\mathbb{R}^n$.

T F

Same dim.

(10) There is a 5×5 matrix A with rank 4 such that the system $A(\vec{x}) = \vec{0}$ has only the solution $\vec{x} = \vec{0}$.

T F

must have ~~no~~ soluts.

(11) If A is a 3×4 matrix and B is a 4×5 matrix then AB is a 5×3 matrix.

T F

3×5

(12) If $2\vec{u} + 3\vec{v} + 4\vec{w} = 5\vec{u} + 6\vec{v} + 7\vec{w}$ then the vectors $\vec{u}, \vec{v}$, and $\vec{w}$ must be linearly dependent.

T F

$u + v + w = 0$

(13) There is a matrix A such that $A \begin{bmatrix} -1 \\ 2 \end{bmatrix} = \begin{bmatrix} 3 \\ 5 \\ 7 \end{bmatrix}$.

T F

can always tak $\vec{x} \neq 0$ ~~sen~~ anywhe.

(14) The function $T \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} y \\ 1 \end{bmatrix}$ is a linear transformation.

T F

$0 \to \begin{matrix} 0 \\ 1 \end{matrix} \neq 0$

(15) The kernel of any invertible matrix consists of the zero vector only.

T F

Same as rref $= I_n$

(16) The system $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 0 & 0 & 0 \end{bmatrix} \vec{x} = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$ is inconsistent.

T F

Last row says it.

(17) There is an invertible matrix A such that $A^{-1} = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$.

T F

rank = 1