

PRINT Your Name: _____

There are 10 problems on 5 pages. Each problem is worth 5 points. SHOW your work. **CIRCLE** your answer. **CHECK** your answer whenever possible.

No Calculators.

1. Define "linear combination". Use complete sentences.

The vector v is a linear combination of the vectors v_1, \dots, v_p if there are numbers c_1, \dots, c_p with $v = c_1 v_1 + \dots + c_p v_p$.

2. Define "linearly independent". Use complete sentences.

The vectors v_1, \dots, v_p are linearly independent if the only numbers c_1, \dots, c_p with $c_1 v_1 + \dots + c_p v_p = 0$ are $c_1 = c_2 = \dots = c_p = 0$.

3. Define "linear transformation". Use complete sentences.

The function $T: \mathbb{R}^n \rightarrow \mathbb{R}^m$ is a linear transformation if $T(u+v) = T(u) + T(v)$ and $T(cu) = cT(u)$ for all u and $v \in \mathbb{R}^n$ and all $c \in \mathbb{R}$.