Last name _____

First name _____

LARSON—MATH 310—WORKSHEET 15
Basis of a Vector Space.

Consider the set

$$\left\{ \begin{pmatrix} 1 \\ 2 \\ 0 \end{pmatrix}, \begin{pmatrix} 2 \\ 3 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ 0 \\ 1 \end{pmatrix} \right\}$$

Is S a **basis** for $\mathbb{R}$?

1. Check if S is a linearly independent or linearly dependent set.

2. Check if S spans $\mathbb{R}$, that is, can every vector in $\mathbb{R}^3$ be represented as a linear combination of the vectors in S?

3. Is S a basis for $\mathbb{R}$?