

Linear Algebra

Vectors

Interpretations of Vectors

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Interpretations of Vectors

- **Algebraic vectors** (\mathbf{v} , \vec{v}): an ordered list of numbers.
 - E.g., $\mathbf{v} = [1 \ 2 \ 3]$
 - Vectors can be written as rows (seen above) or columns (seen below), but differ only at the level of notation and convention.
 - The order of elements in a vector matters:

$$\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix} \neq \begin{bmatrix} 2 \\ 1 \\ 3 \end{bmatrix}$$

- **Dimensionality**: the number of elements in a vector.
- **Geometric vectors**: a line in geometric space that indicates the magnitude and direction from its start point (tail) to its end point (head).
 - Geometric vectors can start at any point in space, but often represented as starting from the **origin**—such vectors are in **standard position**.