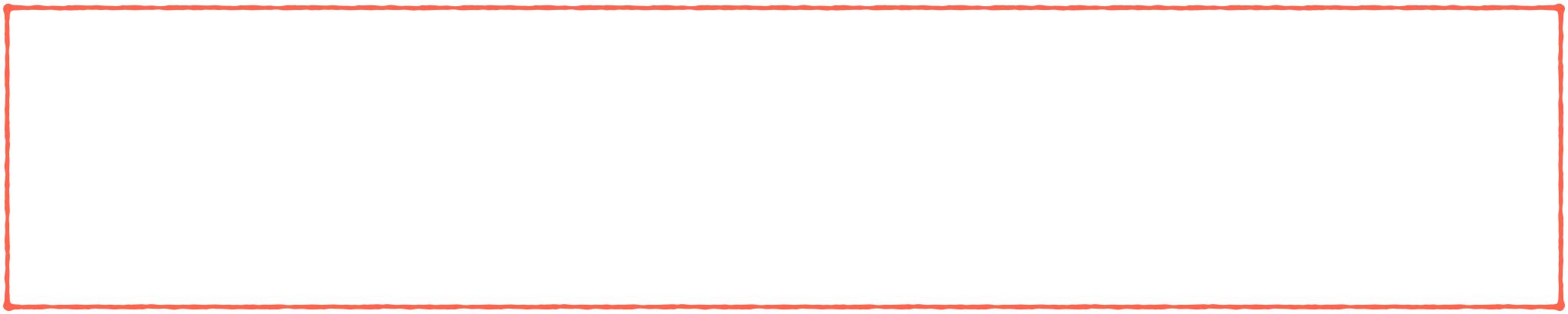


linear combinations



linear combinations

Let A denote the matrix whose columns are the vectors $\overrightarrow{v_1}$, $\overrightarrow{v_2}$, ..., $\overrightarrow{v_n}$. Expressing $\overrightarrow{v} = x_1 \overrightarrow{v_1} + x_2 \overrightarrow{v_2} + \ldots + x_n \overrightarrow{v_n}$ as a linear combination of the given vectors is then equivalent to solving the linear system $Ax = \overrightarrow{v}$.

- Determining whether a given vector is in the linear span of a given set of vectors, and finding coefficients for linear combinations essentially means solving a system of linear equations (we'll return to this later)
- Because of the rules of vector addition, any such linear combination will be in the vector space.

the span