- slope of a vector in $\mathbb{R}^{2}$
- slope of a vector in $\mathbb{R}^{2}$
- scalar multiplication of a vector
- slope of a vector in $\mathbb{R}^{2}$
- scalar multiplication of a vector
- addition of two vectors:
- slope of a vector in $\mathbb{R}^{2}$
- scalar multiplication of a vector
- addition of two vectors: diagonal of parallelogram if they are on different lines
- slope of a vector in $\mathbb{R}^{2}$
- scalar multiplication of a vector
- addition of two vectors: diagonal of parallelogram if they are on different lines
- $\vec{v}$ is a linear combination of $\vec{v}_{1}, \ldots, \vec{v}_{n}$ if $\vec{v}=c_{1} \vec{v}_{1}+\cdots+c_{n} \vec{v}_{n}$, where the weights $c_{i}$ are real.
- slope of a vector in $\mathbb{R}^{2}$
- scalar multiplication of a vector
- addition of two vectors: diagonal of parallelogram if they are on different lines
- $\vec{v}$ is a linear combination of $\vec{v}_{1}, \ldots, \vec{v}_{n}$ if $\vec{v}=c_{1} \vec{v}_{1}+\cdots+c_{n} \vec{v}_{n}$, where the weights $c_{i}$ are real.

Your weighted course average is a linear combination: . 05 Effective Class Engagement + . 05 HW + . 30 Problem Sets + . 50 Exams + . 10 Final Research Presentations

- slope of a vector in $\mathbb{R}^{2}$
- scalar multiplication of a vector
- addition of two vectors: diagonal of parallelogram if they are on different lines
- $\vec{v}$ is a linear combination of $\vec{v}_{1}, \ldots, \vec{v}_{n}$ if $\vec{v}=c_{1} \vec{v}_{1}+\cdots+c_{n} \vec{v}_{n}$, where the weights $c_{i}$ are real.

Your weighted course average is a linear combination: . 05 Effective Class Engagement + . 05 HW + . 30 Problem Sets +.50 Exams +.10 Final Research Presentations

- The span of $\vec{v}_{1}, \ldots, \vec{v}_{n}$ is the set of all linear combinations, over all possible weights. [span2dmovie]
- slope of a vector in $\mathbb{R}^{2}$
- scalar multiplication of a vector
- addition of two vectors: diagonal of parallelogram if they are on different lines
- $\vec{v}$ is a linear combination of $\vec{v}_{1}, \ldots, \vec{v}_{n}$ if $\vec{v}=c_{1} \vec{v}_{1}+\cdots+c_{n} \vec{v}_{n}$, where the weights $c_{i}$ are real.

Your weighted course average is a linear combination: . 05 Effective Class Engagement + . 05 HW + . 30 Problem Sets +.50 Exams +.10 Final Research Presentations

- The span of $\vec{v}_{1}, \ldots, \vec{v}_{n}$ is the set of all linear combinations, over all possible weights. [span2dmovie]
It is a linear space that we can find geometrically or algebraically using a generic vector

$$
c_{1} \vec{v}_{1}+\cdots+c_{n} \vec{v}_{n}=\left[\begin{array}{c}
b_{1} \\
b_{2} \\
\vdots
\end{array}\right]
$$

