MATH425 Lecture 5

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1 The inner product/dot product

Given two vectors:

$$\vec{v} = [2, 2]$$

$$\vec{u} = [3, 0]$$

The dot product of those two vectors an be expressed as the following generalization:

$$\text{Given } v = [v_1, \ldots v_n]$$
$$\text{and } u = [u_1, \ldots, u_n]$$
$$v \cdot u = \sum_{i=1}^{n} v_i u_i$$

Two vectors are **orthogonal** if it is the case that:

$$\vec{u} \cdot \vec{v} = 0, \forall \vec{u}, \vec{v} \in \mathbb{F}^d$$