



## Subspace Orthogonal Complements

### 1 Why

### 2 Main Result

**Proposition 1.** *The orthogonal complement of a subspace is a subspace.*

**Proposition 2.** *Let  $L \subset \mathbf{R}^n$  be a subspace. Then*

$$\dim L + \dim L^\perp = n.$$

**Proposition 3.** *Let  $b_1, \dots, b_m$  be a basis for a subspace  $L \subset \mathbf{R}^n$ . Then  $x \perp L$  if and only if  $x \perp b_i$  for  $i = \{1, 2, \dots, m\}$ .*