- Define $W = \text{span}(v_1, \ldots, v_m)$. **

- We want to show $v_1, \ldots, v_m$ is basis of W; ie $v_1, \ldots, v_m$ is linearly indep.

  Suppose there exists $a_1, \ldots, a_m$ not all are zero such that

  $a_1 v_1 + \ldots + a_m v_m = 0$,

  then

$$a_1 v_1 + U + \ldots + a_m v_m + U$$

$$= (a_1 v_1 + \ldots + a_m v_m) + U$$

$$= 0 + U$$

$$= 0_{V/U}$$