Affine Spaces

Rules

$b \neq 0$

$c \neq 0$

$c \neq$ LC of $\{v_1, \ldots, v_k\}$

Solutions of $A_{mn}\vec{x} = \vec{b} \Leftrightarrow$ Affine Space of R^n

Solutions of $A_{mn}\vec{x} = \vec{b} \Leftrightarrow$ $\vec{c} + \text{span}[\vec{y_1}, \vec{y_2}, \ldots \vec{y_n}]$

$\vec{c} + \text{span}[\vec{y_1}, \vec{y_2}, \ldots \vec{y_n}] \Leftrightarrow$ Affine Space of R^n

Combining Affine Spaces

Let U, V be affine spaces

$U = c_u + \text{span}\{u_1, \ldots, u_k\}$

$V = c_v + \text{span}\{v_1, \ldots, v_l\}$

$U \cap V$

$\vec{x} \in U \cap V$

$\vec{x} = c_u + LC\{u_1, \ldots, u_k\} = c_v + LC\{v_1, \ldots, v_l\}$

$LC\{u_1, \ldots, u_k, v_1, \ldots, v_l\} = c_v - c_u$

Solve EROs, GE, as normal