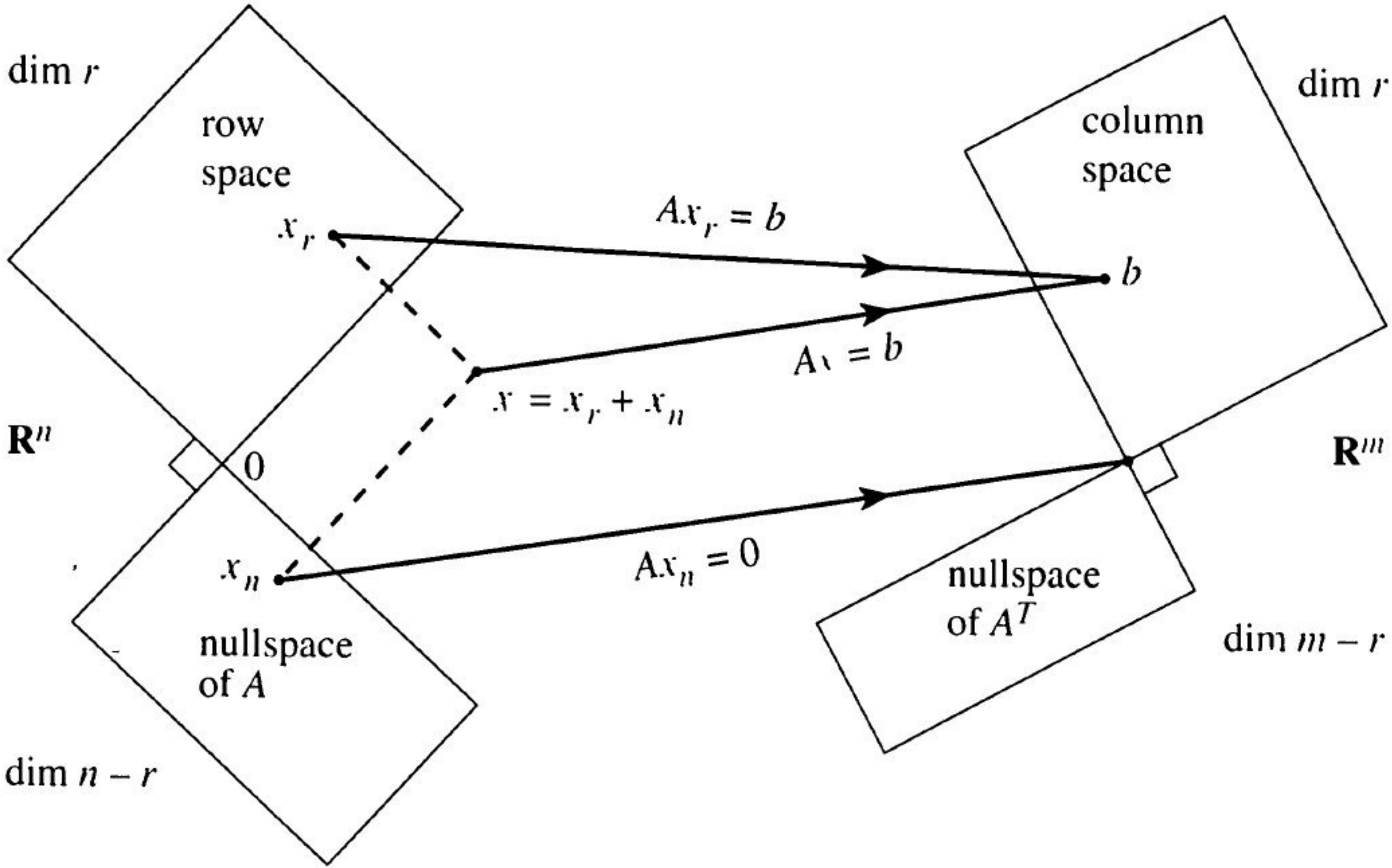
dim r
row space
x_r
$Ax_r = b$
b
dim r
column space
$Ax = b$
$x = x_r + x_n$
$\mathbf{R}^n$
0
$\mathbf{R}^m$
$Ax_n = 0$
x_n
nullspace of A
nullspace of A^T
dim $n - r$
dim $m - r$