a basis for the subspace of $\mathbb{R}^3$ that spanned by th

$(1,0,0)$, $v_2 = (1,0,1)$, $v_3 = (2,0,1)$, $v_4 = (0,0,-1)$

$\in \mathbb{R}$

$v_2 = v_1 - v_4$

$v_3 = 2v_1 - v_4$

$$a v_1 + b v_4 = 0$$

es

$$a(1,0,0) + b(0,0,-1) = |0,0,0|$$

$$(a, 0, -b| = (0,0,0)$$

implica que $a = 0 = b$, v_1 y v_4 son lin

$v_1, v_4\}$ es una base por $\{v_1, v_2, v_3, v_4\}$

$\{v_1, v_4\}$