MafI 1 UB10

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10.1 Untervektoren, lineare Abhaengigkeit und Basis

10.1.1

$U := \{(x_1, x_2, x_3)^t \in \mathbb{R} | x_1 = x_2\}$

$(0,0,0)^t \in U \Rightarrow U \neq \emptyset$

$\forall x \in U.(x_1, x_2, x_3)^t = (x_1, x_1, x_3)^t$
$x_1, x_2 \in U$

$x_1 + x_2 = (x_1 + x_1', x_1 + x_1', x_3 + x_3')$
o offensichtlich gilt $x_1 + x_1' = x_1 + x_1'$

$s \in \mathbb{R}$
$s * x_2 = (s * x_1 + s * x_1 + x_3) \in U$

10.1.2

$B_U = \{(1,1,0)^t, (0,0,1)^t\}$

$(0,0,0)^t = a * (1,1,0)^t + b * (0,0,1)^t$
$\Rightarrow a = b = 0$

10.1.3

$x_1 = (1,-1), x_2 = (1,1) \in U$
$x_1 + x_2 = (2,0)$

$|2| \neq |0|\natural$