

+ NUL/SUB SPACE

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Argument that:

$3x_1 + x_3$ is a subspace in \mathbb{R}^3
and find the basis for it

$$\begin{bmatrix} 3 & 0 & 1 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} \rightarrow \begin{bmatrix} 1 & 0 & \frac{1}{3} \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

↖ Gauss elimination

$$\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} -\frac{1}{3}x_3 \\ x_2 \\ x_3 \end{bmatrix}$$

Isolate for $x_1 = -\frac{1}{3}x_3$

These exist but only for them selves
hence $x_2 = x_2$ and $x_3 = x_3$

$$\begin{bmatrix} -1/3 x_3 \\ x_2 \\ x_3 \end{bmatrix}$$

$$x_1 = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$$

$$x_2 = \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}$$

$$x_3 = \begin{bmatrix} -1/3 \\ 0 \\ 1 \end{bmatrix}$$

da x_1 ikke er tilstede

da x_2 er til ved sig selv

da x_3 er både ved " x_1 " og " x_3 "