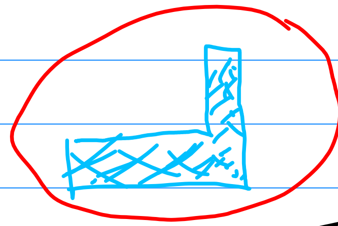
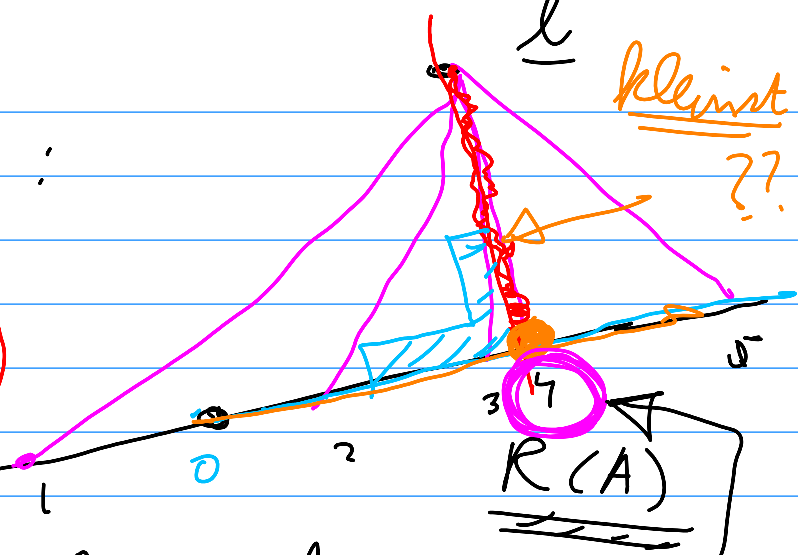
2018-11-06:

2 b)

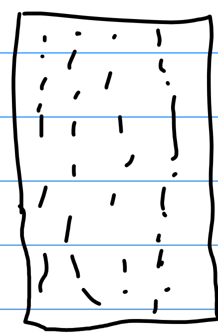




$$Ax = l$$

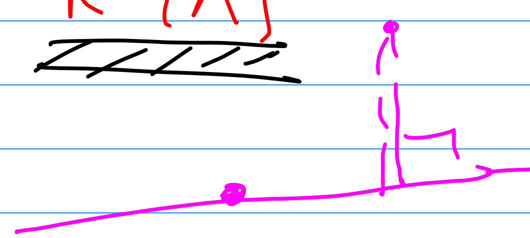
$$\tilde{x} = (A^T A)^{-1} A^T l$$

$$A\tilde{x}$$



$$= (l - A\tilde{x}) \perp R(A)$$

$$A^T(l - A\tilde{x})$$



$$A^T(\cdot - \cdot)$$

$$\begin{pmatrix} \text{---} \\ \\ \text{---} \end{pmatrix} \begin{pmatrix} \vdots \end{pmatrix} = \begin{pmatrix} 0 \\ \vdots \\ 0 \end{pmatrix}$$

$$A^T(l - A\tilde{x}) =$$

$$A^T(l - A(A^T A)^{-1} A^T l) =$$

$$A^T l - (A^T A)(A^T A)^{-1} A^T l = 0$$

projectie b
op $R(A)$

d) $\rightsquigarrow \tilde{x}$ $A\tilde{x}$

$$A^T \cdot (b - A\tilde{x}) = \underline{0}$$

(Andere file ben ik kwijt geraakt
sorry.)

ew. altijd $\neq 0$

$$Ax = \lambda_1 x$$

? $\underline{x \perp y}$?

$$A^T y = \lambda_2 y$$

$$\rightarrow (A^T y = \lambda_2 y)^T \quad y^T A = \lambda_2 y^T$$

$$y^T A x = y^T \lambda_1 x = \lambda_1 \cdot (y^T x)$$

$$\|$$

$$\lambda_2 y^T \cdot x \qquad \Rightarrow \underbrace{(\lambda_1 - \lambda_2)}_{\neq 0} y^T \cdot x = 0$$

$$\Rightarrow \underline{y^T \cdot x = 0}$$

Wat te doen?? Volgende week nog een keertje een sessie houden? Laat weten!!

(6.3) (d)

$$\left|\begin{pmatrix} 2 & 2 & 1 \\ 0 & 1 & 2 \\ 0 & a & -1 \end{pmatrix} - \lambda I\right| = 0$$

$$\Rightarrow (2-\lambda)(1-\lambda)(-1-\lambda) = 0$$

<u>ew</u> : $\underline{\lambda = 2}$, $\underline{\lambda = 1}$, $\underline{\lambda = -1}$

<u>$\lambda = 2$</u> : $\left(\begin{array}{ccc|c} 0 & 2 & 1 & 0 \\ 0 & -1 & 2 & 0 \\ 0 & 0 & -3 & 0 \end{array}\right) \Rightarrow$

$y = 0$, $z = 0$, <u>x willekeurig</u>

$$ev = \begin{pmatrix} x \\ 0 \\ 0 \end{pmatrix} \Rightarrow x \cdot \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}$$

$$\underline{E_2 = \left\langle \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix} \right\rangle} \quad \left(A\begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix} = \begin{pmatrix} 2 \\ 0 \\ 0 \end{pmatrix} \right)$$

$\boxed{\text{ev kan nooit } \begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix} \text{ zijn}}$

$A\begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix} = \lambda \begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}$, λ <u>kies maar wat je</u> <u>wilt</u>

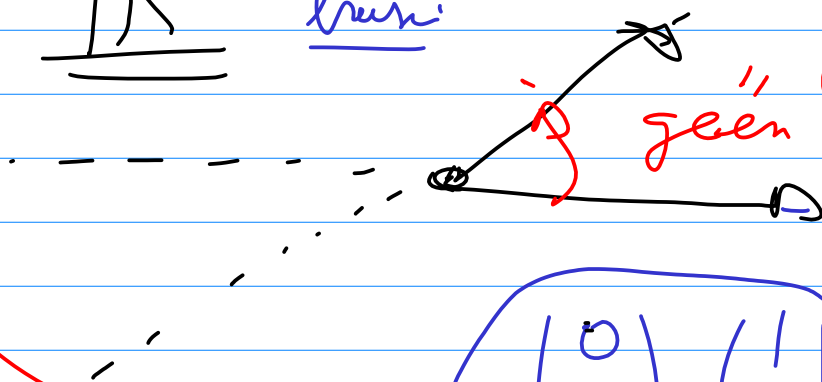
S deelruimte van $\mathbb{R}^n$

$\dim(S^\perp) = (n - \dim(S))$

$\mathbb{R}^3$:

$$\begin{pmatrix}1\\2\\3\end{pmatrix} = 1\cdot\begin{pmatrix}1\\0\\0\end{pmatrix} + 2\begin{pmatrix}0\\1\\0\end{pmatrix} + 3\begin{pmatrix}0\\0\\1\end{pmatrix}$$

$\mathbb{R}^2$ tweede term $\begin{pmatrix}0\\1\end{pmatrix}$



geen ″ $(\pi/2)$

$\begin{pmatrix}1\\0\end{pmatrix}$ eerste term

$$\begin{pmatrix}0\\1\end{pmatrix}\cdot\begin{pmatrix}1\\0\end{pmatrix} = 0$$

$x + y$

αy

$f(x,y) = (y,x)$

$(x,x) = 0 \quad x = 0$

$\dim(\mathbb{R}^n \setminus S) = n-k$

$\mathbb{R}^n$, S deelr. van $\mathbb{R}^n$ dim $S = k$