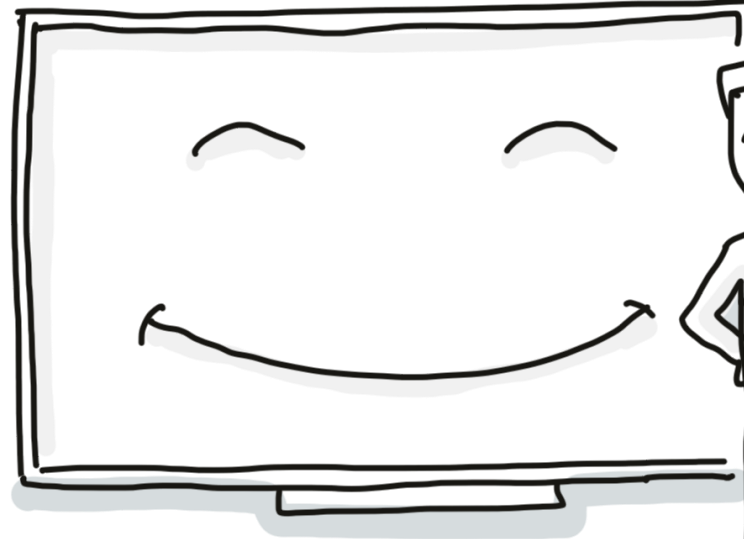


Tavlebruk

- Gruppelærer dagen 01.14.2022

MAKE FRIENDS WITH YOUR WHITEBOARD

ABCDEFGHIJKLM
NOPQRSTUVWXYZ



- Fast and legible handwriting.

- Fast and simple drawings from your visual vocabulary for visual anchors.

Technique #1 — Fast and legible handwriting

CALLIGRAPHIC JOINED-UP HANDWRITING



GOOD FOR



EYE-HAND
COORDINATION



ARTISTIC
EXPRESSION



ESTABLISHING
SCHOOL DISCIPLINE

A B C D E F G H I J K
L M N O P Q R S T U
V W X Y Z
a b c d e f g h i j k
l m n o p q r s t u
v w x y z



NOT SO GOOD FOR



QUICK & CLEAR NOTES
ON WHITEBOARDS



READABLE NOTES
ON STICKY POST-ITS



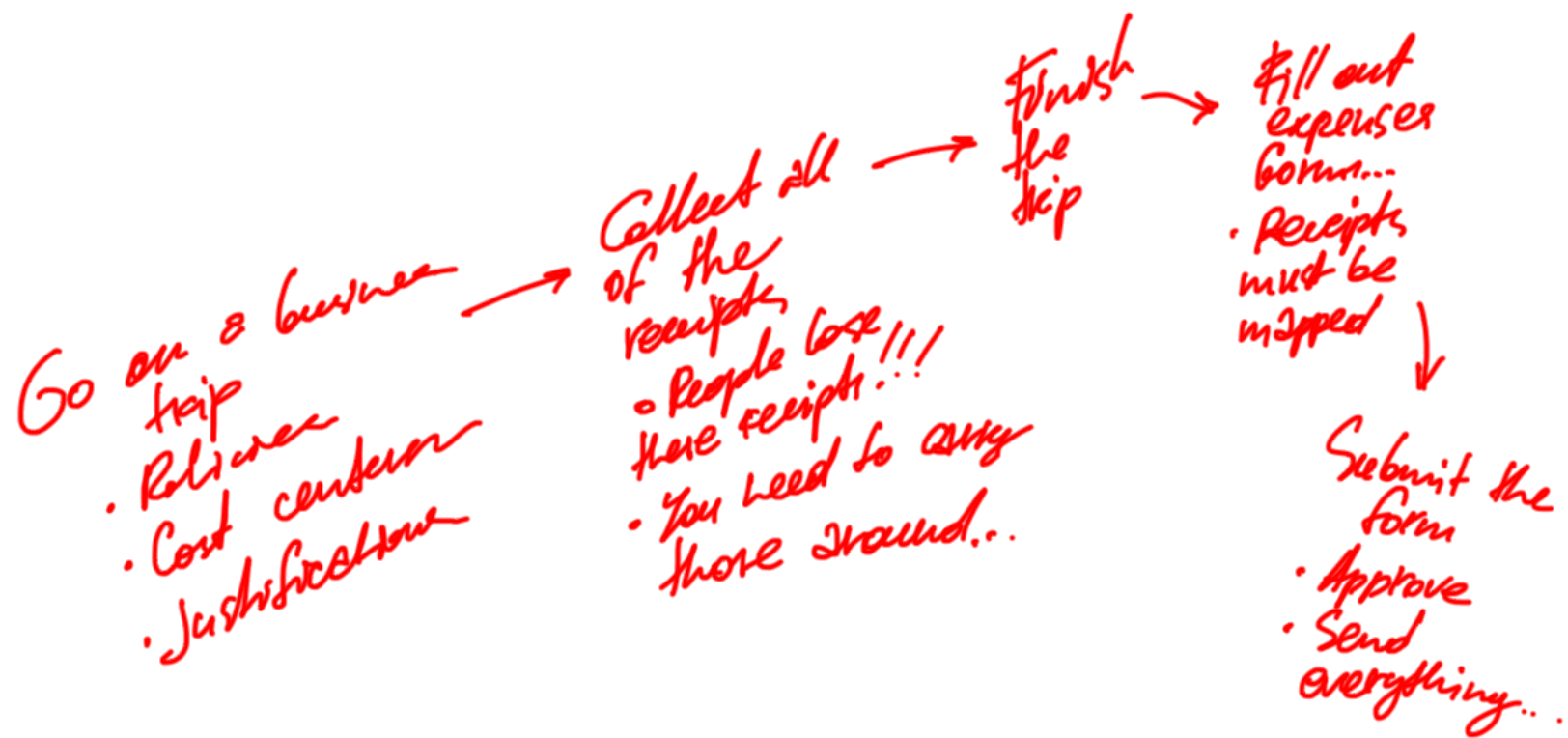
SKETCHNOTING
NOTES

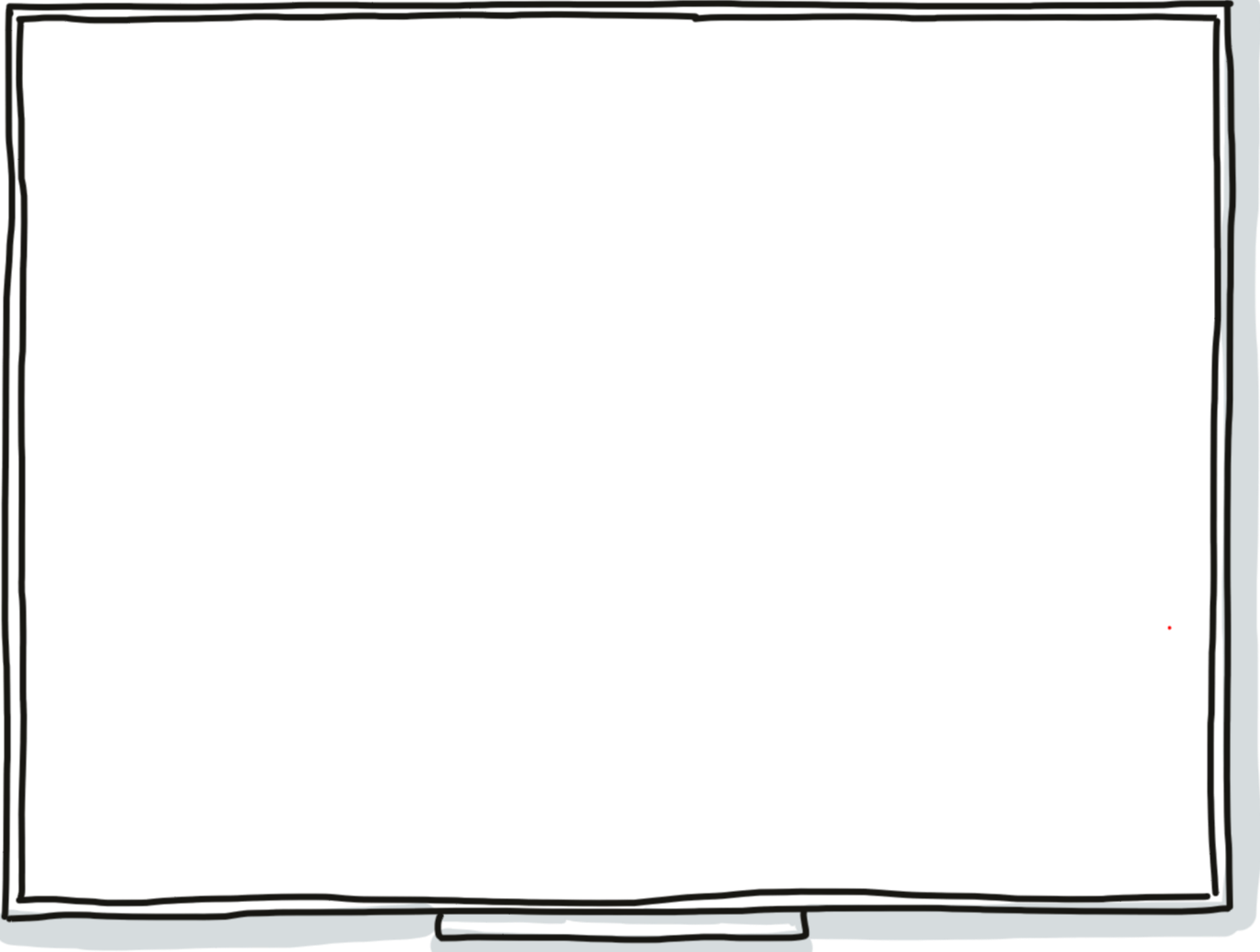
Helen's company has hired a vendor to supply a software product that makes it easier for their employees to track and report expenses. As Helen had the knowledge about the current process, so she was asked to lead a workshop with the vendor to map out the most common scenario — tracking and reporting expenses related to business travels. And bummer, Nora was away from the office, so she had to draw everything herself.

The process was not documented, so she had to explain it on a whiteboard, with the vendor asking questions as she went on.

She gave the explanation by pointing out five major steps of the process:

- Go on a business trip.
- Collect all the receipts.
- Finish the trip.
- Fill out the expenses form.
- Submit the form





a b c d e f g h i j k l m

n o p q r s t u v w x y z

1 2 3 4 5 6 7 8 9 0

<https://matheducators.stackexchange.com/a/171/596>

A B C D E F G H I J K L M

N O P Q R S T U V W X Y Z

α β γ δ ϵ ζ η θ ι κ λ μ ν

ξ $\omicron$ π ρ σ τ υ φ χ ψ ω

GO ON A BUSINESS
TRIP

- POLICIES
- COST CENTERS
- JUSTIFICATIONS



COLLECT ALL
OF THE
RECEIPTS

- PEOPLE OFTEN
LOSE RECEIPTS
- YOU NEED TO
CARRY RECEIPTS
AROUND WITH YOU



FINISH
THE
TRIP



FILL OUT
EXPENCES
FORM

- RECEIPTS
MUST BE
MAPPED!



SUBMIT
THE FORM

- APPROVE
- SEND
EVERYTHING
TO FIN DEPT

GO ON A BUSINESS TRIP

- POLICIES
- COST CENTERS
- JUSTIFICATIONS



COLLECT ALL OF THE RECEIPTS

- PEOPLE OFTEN LOSE RECEIPTS!
- YOU NEED TO CARRY RECEIPTS AROUND WITH YOU



FINISH THE TRIP



FILL OUT EXPENCES FORM

- RECEIPTS MUST BE MAPPED!



SUBMIT THE FORM

- APPROVE
- SEND EVERYTHING TO FIN DEPT

1/3

2/3

↓

GO ON A BUSINESS TRIP

- POLICIES
- COST CENTERS
- JUSTIFICATIONS



↓

COLLECT ALL OF THE RECEIPTS

- PEOPLE OFTEN LOSE RECEIPTS!
- YOU NEED TO CARRY RECEIPTS AROUND WITH YOU



↓

FINISH THE TRIP



↓

FILL OUT EXPENCES FORM

- RECEIPTS MUST BE MAPPED!



↓

SUBMIT THE FORM

- APPROVE
- SEND EVERYTHING TO FIN DEPT



2 FINGERS FONT SIZE



GO ON
A BUSINESS
TRIP

- POLICIES
- COST CENTERS
- JUSTIFICATIONS



1 FINGER FONT SIZE

SIMPLE



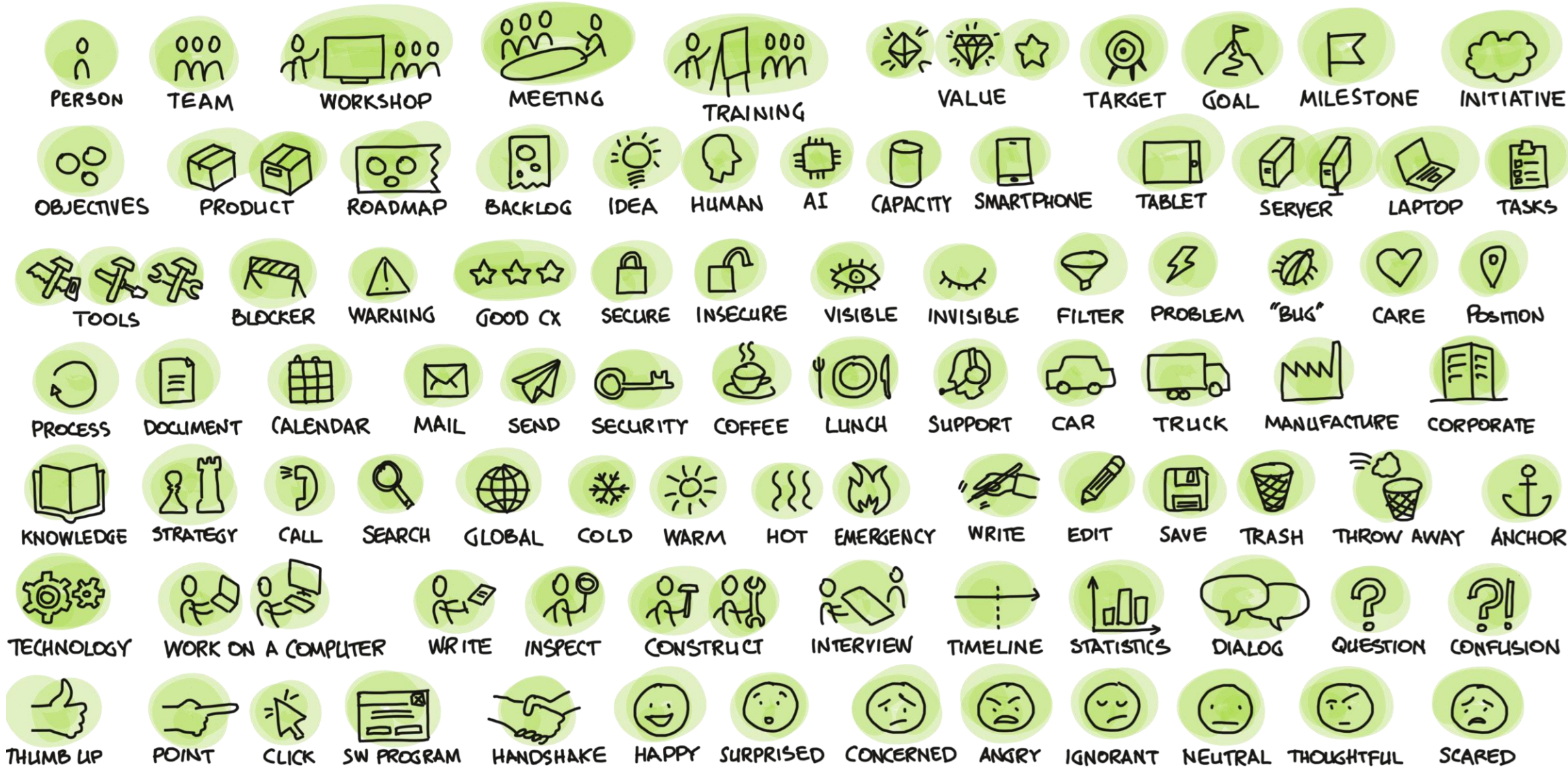
MINIMIZE THE NUMBER OF
STROKES

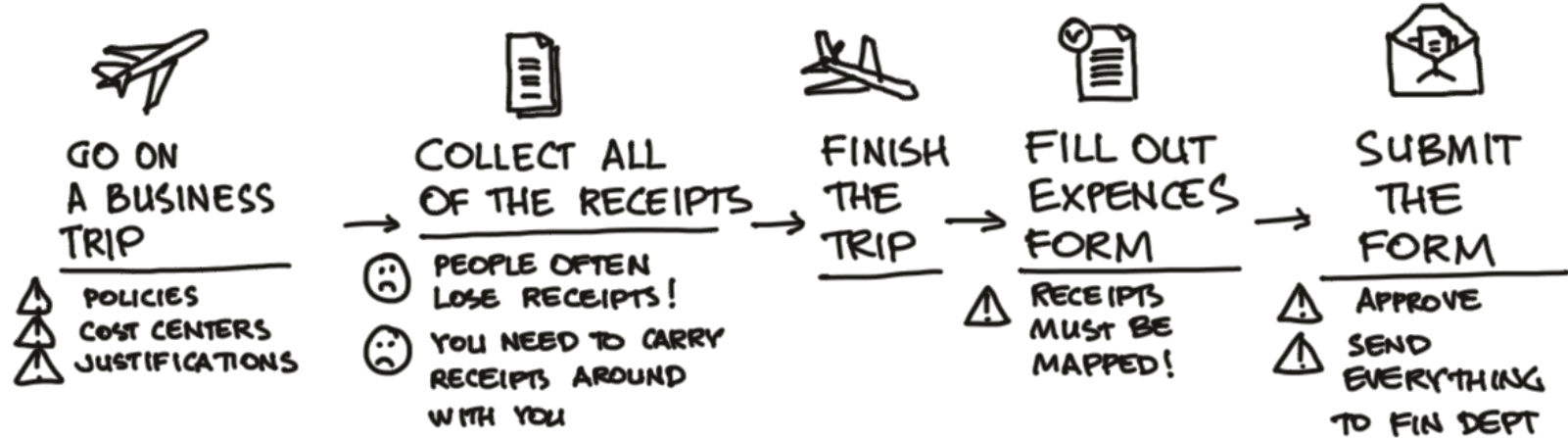


USE THREE REPETITIVE
ELEMENTS TO ILLUSTRATE
MANY



USE THE 'SAMPLING' METHOD
TO AVOID THE PAINSTAKING
EFFORT





⚠ IMPORTANT CONSTRAINTS

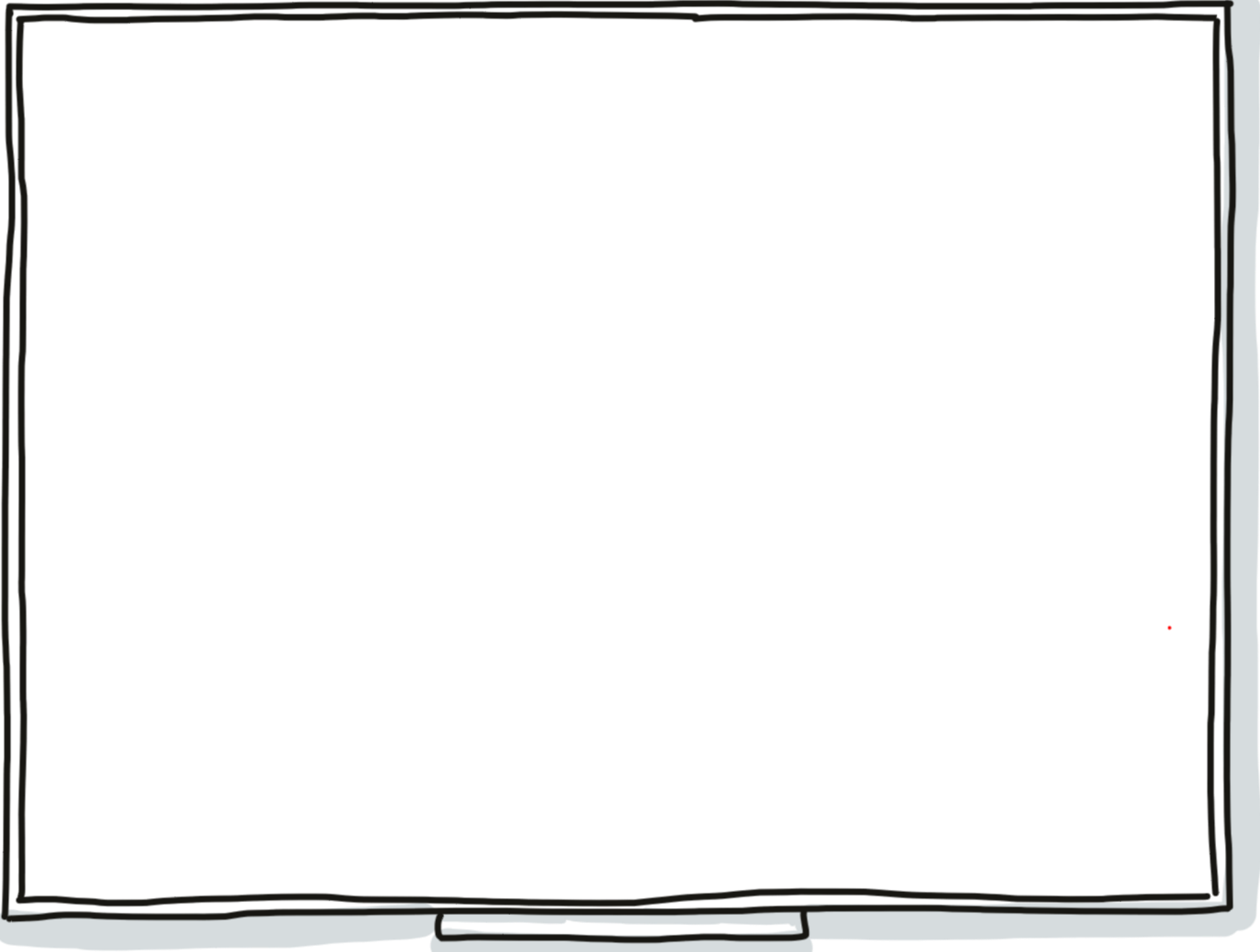
☹ MAJOR PAINS

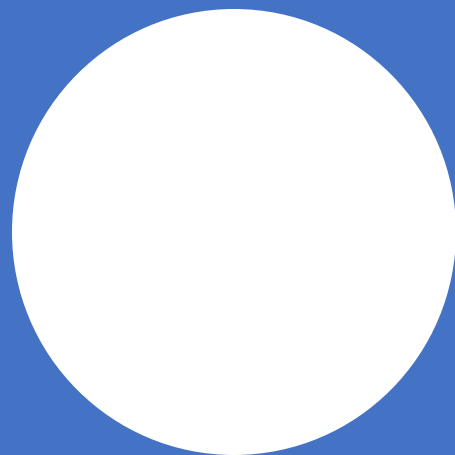


↑ IMPORTANT CONSTRAINTS

☹ MAJOR PAINS







Øisteins digitale tavle

Uke 3 - 3

Vektorer

Parallele vektorer

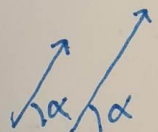
Parameter fremstilling

^{Prise}
Prikkprodukt

Parallele vektorer

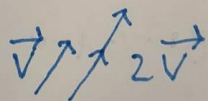
$$\vec{u} \parallel \vec{v}$$

↑
Parallell



Krysser aldri

$t \cdot \vec{v}$ er parallell med v for alle $t \in \mathbb{R}$



Tilsvarende er $u \stackrel{og}{\parallel} v$ parallell
Dersom det eksisterer $t \in \mathbb{R}$ slik at

$$t \cdot u = v$$

$$u \parallel v \Leftrightarrow \exists t \in \mathbb{R} : t \cdot u = v$$

Uke 3 - 3

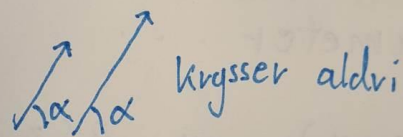
Vektorer

Parallele vektorer
Parameter fremstilling
Pause
Prikkprodukt

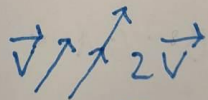
Parallele vektorer

$$\vec{u} \parallel \vec{v}$$

↑
Parallel



$t \cdot \vec{v}$ er parallell med v for alle $t \in \mathbb{R}$



Tilsvarende er $u \parallel v$ parallell
Dersom det eksisterer $t \in \mathbb{R}$ slik at

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Uke 3 - 3

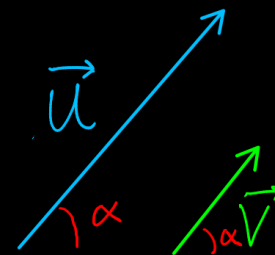
Vektorer

- * Parallele vektorer
- * Parameter fremstilling
- * Pause
- * Prikkprodukt

Parallele vektorer

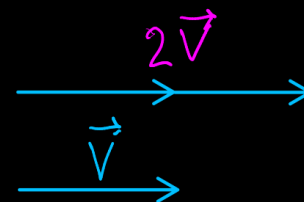
$$\vec{u} \parallel \vec{v}$$

↑
Parallel



Parallele om
de aldri
krysser

$t \cdot \vec{v}$ er parallell med $\vec{v}$



[0, 15] (4, 7) Eksempel
[4, -2] [-6, 3]

P er et
på linje

Vektorregning 507

Parameter . . .

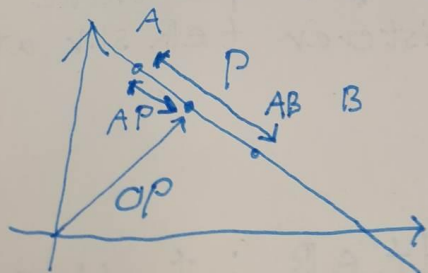
A(1, 4) og B(3, 1)

Som
for

Reten mellom A og B er

Ved
på

$$\begin{aligned}\vec{AB} &= OB - OA = [3 - 1, 1 - 4] \\ &= [2, -3]\end{aligned}$$



$AP \parallel AB$
slik at

$$\begin{aligned}AP &= t \cdot AB \\ &= [2t, -3t]\end{aligned}$$

$$\begin{aligned}OP &= OA + AP \\ &= [1 + 2t, 4 - 3t]\end{aligned}$$

[0, 1] [4, 7] Eksempel
[4, -2] [-6, 3]

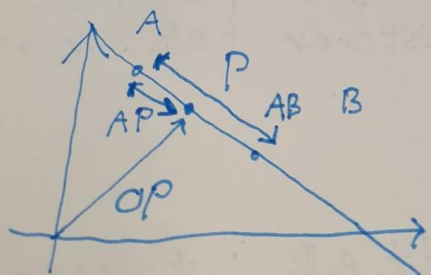
Vektorregning 507

Parameter...

A(1, 4) og B(3, 1)

Vektoren mellom A og B er

$$\vec{AB} = \vec{OB} - \vec{OA} = [3-1, 1-4] = [2, -3]$$



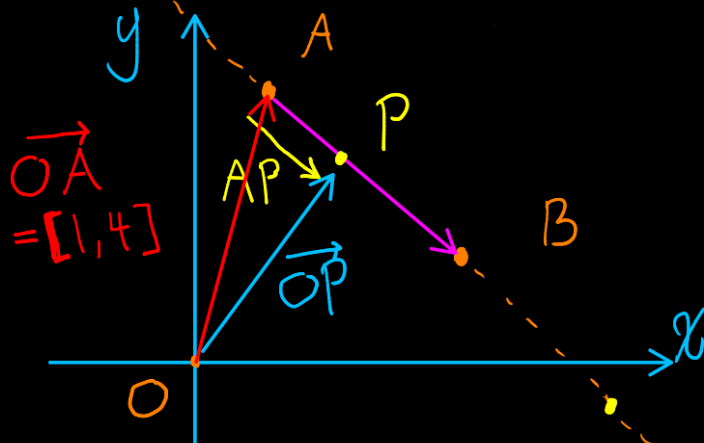
$$\begin{aligned} AP &\parallel AB \\ \text{slik at} \\ AP &= t \cdot AB \\ &= [2t, -3t] \end{aligned}$$

$$\begin{aligned} \vec{OP} &= \vec{OA} + \vec{AP} \\ &= [1+2t, 4-3t] \end{aligned}$$

La A(1, 4) og B(3, 1)

Vektoren fra A til B er

$$\vec{AB} = \vec{OB} - \vec{OA} = [3-1, 1-4] = [2, -3]$$



$$\vec{AP} \parallel \vec{AB}$$

$$\Leftrightarrow \vec{AP} = t \cdot \vec{AB}$$

$$\vec{AP} = [2t, -3t]$$

Koordinatene til P er lik $\vec{OP}$

$$\vec{OP} = \vec{OA} + \vec{AP}$$

$$= [1, 4] + [2t, -3t]$$

[0, 15] (4, 7) Eksempel
[4, -2] [-6, 3]

P er et
på linje

Vektorregning 507

Parameter . . .

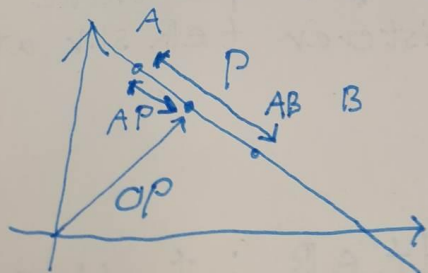
A(1, 4) og B(3, 1)

Retningen mellom A og B er

$$\begin{aligned}\vec{AB} &= OB - OA = [3 - 1, 1 - 4] \\ &= [2, -3]\end{aligned}$$

Som
for

Ved
på



$AP \parallel AB$
slik at

$$\begin{aligned}AP &= t \cdot AB \\ &= [2t, -3t]\end{aligned}$$

$$\begin{aligned}OP &= OA + AP \\ &= [1 + 2t, 4 - 3t]\end{aligned}$$

$B(3,1)$
 vektor fra A til B er
 $\vec{AB} = \vec{OB} - \vec{OA} = [3, 1] - [1, 4] = [2, -3]$
 $\vec{AP} \parallel \vec{AB}$
 $\vec{AP} = t \cdot \vec{AB}$
 $\vec{AP} = [2t, -3t]$
 P er lik $\vec{OP}$
 $\vec{OA} + \vec{AP}$
 $[1, 4] + [2t, -3t]$

Uke 3 - 3

Vektorer

- * Parallele vektorer
- * Parameter fremstilling
- * Pause
- * Prikkprodukt

Parallele vektorer

$\vec{u} \parallel \vec{v}$
 Parallele

$\vec{u} \parallel \vec{v}$
 Parallele om de aldri krysser!

Uke 3-3
 Vektorer
 Parallele vektorer
 Parameter fremstilling
 Prikkprodukt
 Pause

Parallele vektorer
 $\vec{u} \parallel \vec{v}$
 $\vec{u} = t \vec{v}$
 $t \in \mathbb{R}$
 $\vec{u} \parallel \vec{v}$
 Parallele om de aldri krysser!

$\vec{u} = t \vec{v}$
 $\vec{u} = t \cdot [2, -3]$
 $\vec{u} = [2t, -3t]$
 $\vec{u} = [2, -3]$





Tips til digitale tavler



Det som fungerer fysisk
fungerer ikke digitalt!



Digitalt:

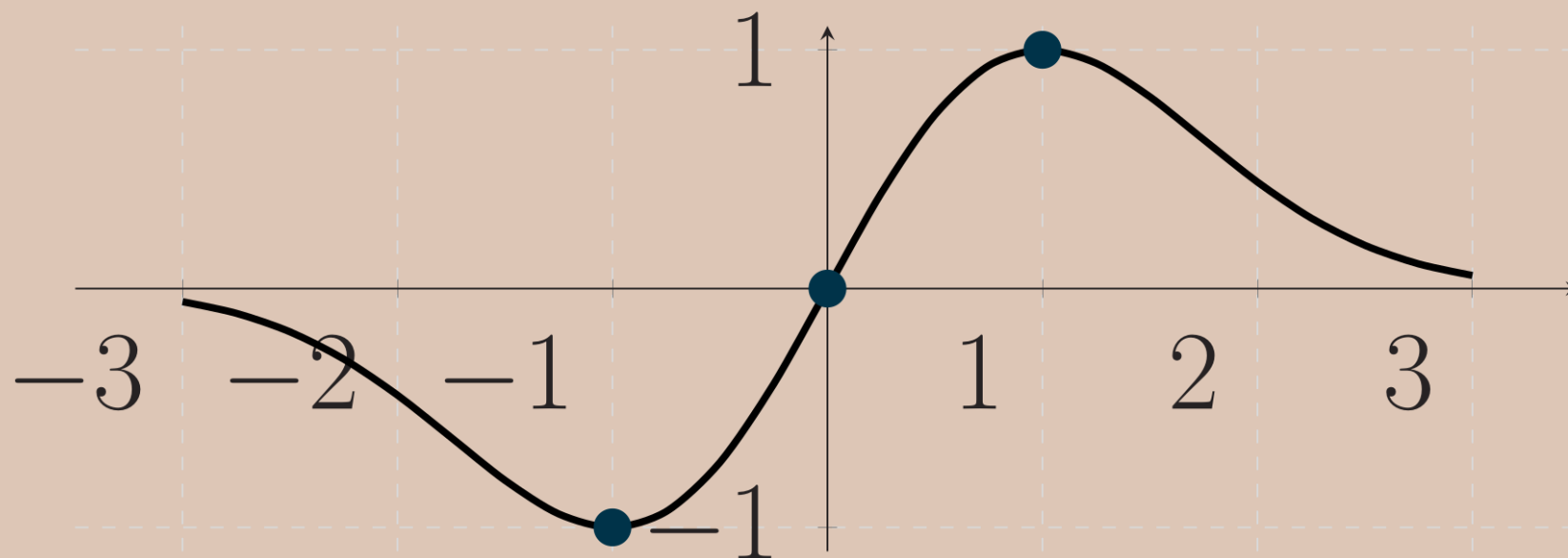
Gi oppgaver som
kan diskuteres
muntlig

Mindre regning

Kjør polls!

Padlet <3

Be studentene
laste opp
whiteboardet
fra breakout



Figuren viser grafen til funksjonen f .
Avgjør hvorvidt f , f' og f'' positiv,
negativ eller null i punktene over.



PC med touchskjerm / iPad og mus kan brukes med Zoom's whiteboard

Zoom's whiteboard kan brukes i breakoutroom

Koble til zoom via mobil for å vise skrivebok