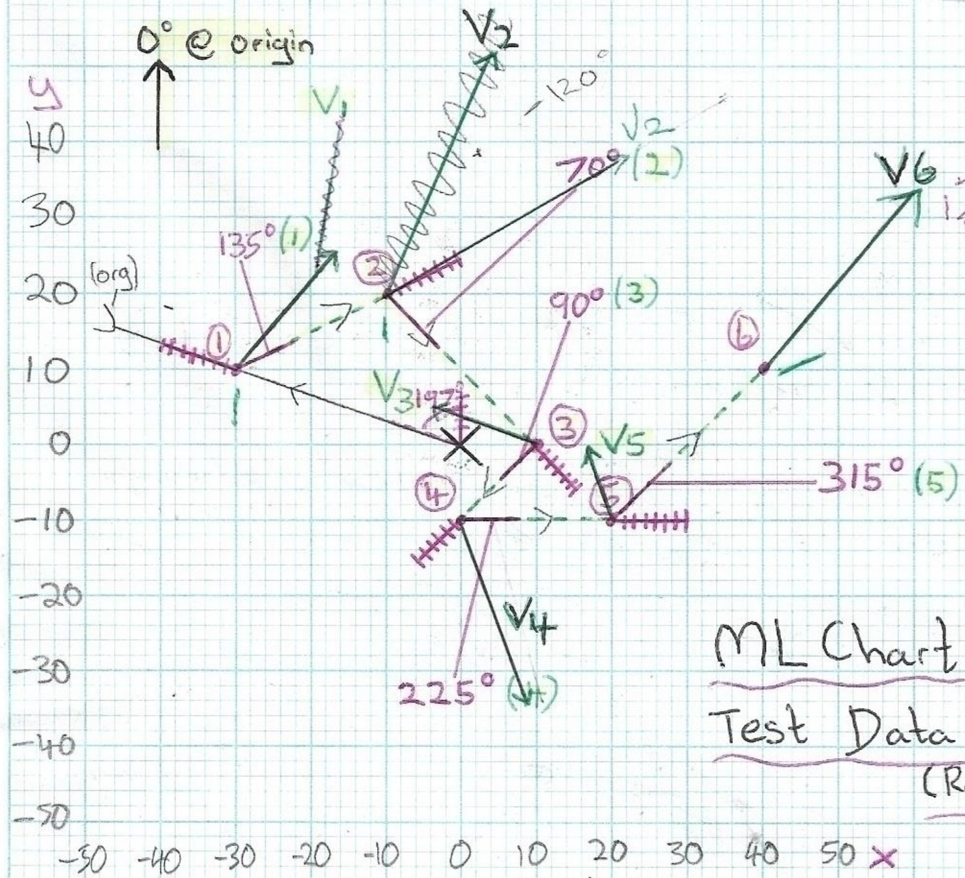
Charlotte Élisabeth Ameil



336°

$V_1 =$ ~~246~~ , m20 $(1\frac{13}{15}\pi)$ 5.86431

$V_2 =$ ~~[illegible]~~ 285 , m35 ~~4.97419~~ 4.97419 $1\frac{7}{12}\pi$

$V_3 = 65°$, m15 $(\frac{13}{36}\pi)$ 1.13446

$V_4 = 70°$, m25 $(\frac{7}{18}\pi)$ 1.22173

$V_5 = 295°$, m10 $(1\frac{23}{36}\pi)$ 5.14872

$V_6 = 355°$, m30 $(1\frac{35}{36}\pi)$ 6.19592

ML Chart

Test Data Sheet 2

(Relative Coordinates)

wp① = (-30, 10)

wp② = (-10, 20)

wp③ = (10, 0)

wp④ = (0, -10)

wp⑤ = (20, -10)

wp⑥ = (40, 10)

WP Vecteur Donnees Relative			
① de origine	@ ~~197~~ 287	m ~	$(1\frac{107}{180}\pi)$ 5.00909 ~~3.43830~~
① → ②	@ 135°	m 22	$(\frac{3}{4}\pi)$ 2.35619
② → ③	@ ~~70°~~ 74	m 29	~~$(\frac{7}{18}\pi)$~~ $\frac{37}{90}\pi$ 1.29154 ~~1.22173~~
③ → ④	@ 90°	m 15	$(\frac{1}{2}\pi)$ 1.57080
④ → ⑤	@ 225°	m 20	$(1\frac{1}{4}\pi)$ 3.92699
⑤ → ⑥	@ 315°	m 29	$(1\frac{3}{4}\pi)$ 5.49779

Vecteurs (approx.)

$V_1 = \sim(-17, 25)$

$V_2 = \sim(20, 38)$

$V_3 = \sim(-5, 6)$

$V_4 = \sim(9, -36)$

$V_5 = \sim(17, 0)$

$V_6 = \sim(58, 34)$

P, g = 120

① origine (0, 0) Dans tous les nombres à illumine le programme!

Position-map see new page.

① = pos x

② = pos y

③ = Magnitude

④ vector to position in (deg)

⑤ relative vector for position in (degs)

⑥ Magnitude of force vector

absolute

⑧ realtive Magnitude

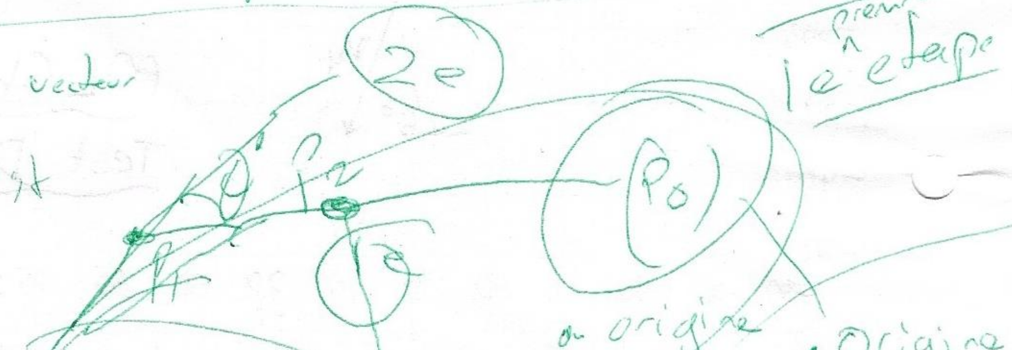
⑦ force vector abosote

⑨ realtive force vector

→ 1st prem données
à position origine
mais le vecteur $A \to B$ pas exist comme A et B
sont dans les autre temps.

A → B sont réaliser avec un retard de temps
cette retarde est les temps A à B.

• Le calcu pour le vecteur



• Origine comme connaisse de le premiers

Si le premier comme le vecteur
position selon
position dans
la carte

(premier point) origine
et après le calcu
et les données pour le
deuxième position

• Position une comme le origine toujours!

• Position sont le premier calcu ici.
vecteur
• donc après ce

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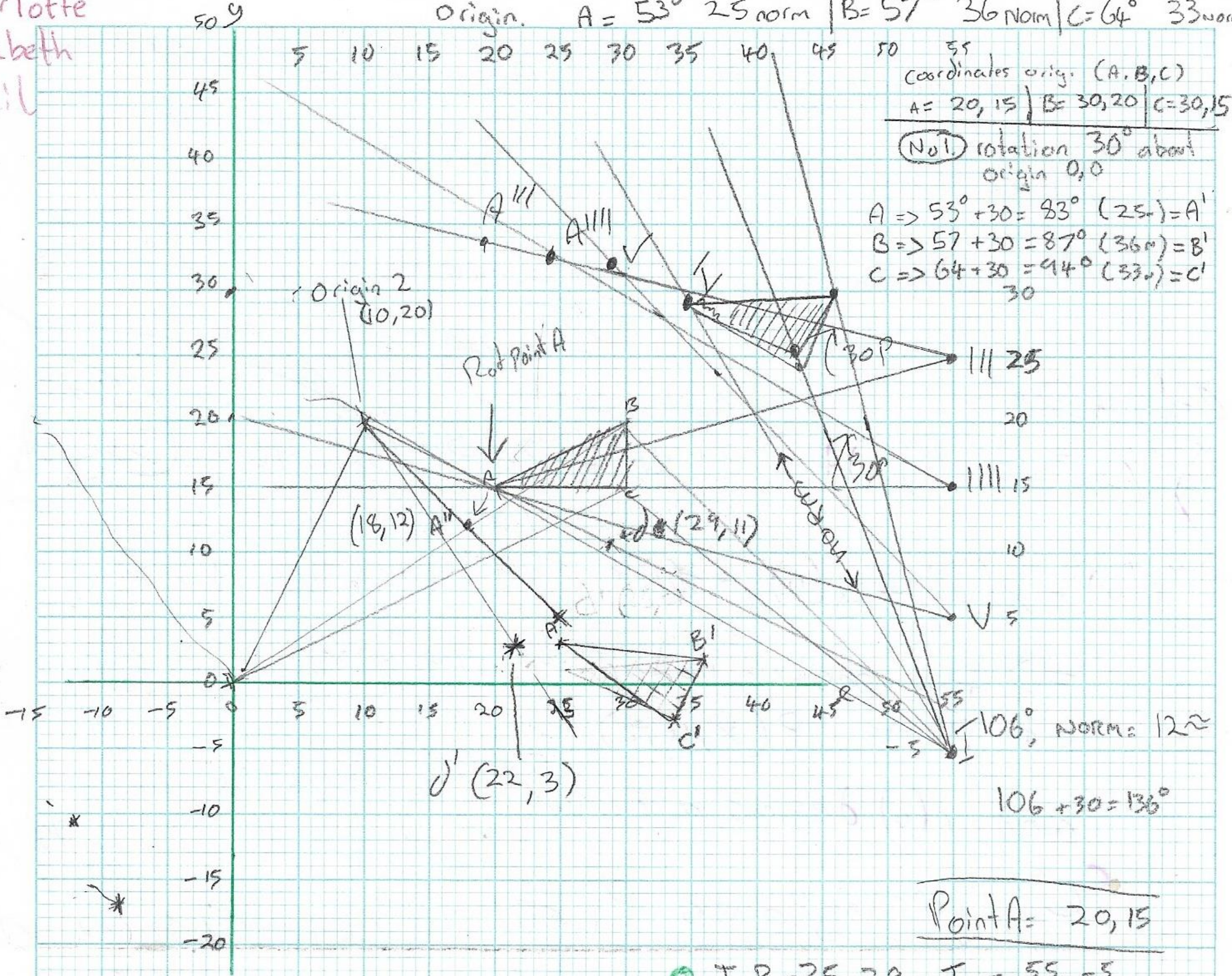
Origin. A = 53° 25 norm | B = 57° 36 Norm | C = 64° 33 norm



coordinates orig. (A, B, C)

A = 20, 15	B = 30, 20	C = 30, 15

No1 rotation 30° about origin 0,0

A => 53° + 30 = 83° (25n) = A'
B => 57 + 30 = 87° (36n) = B'
C => 64 + 30 = 94° (33n) = C'

Point A: 20, 15

- I R = 35, 29   I = 55, -5
- V R = 29, 32   V = 55, 5
- IIII R = 24, 33   IIII = 55, 15
- III R = 19, 34   III = 55, ~~30~~ 25

Poscrotate

1) getnorm → $\bar{c}$
2) getheading

≈ sind(deg) * $\bar{c}$, cosd(deg) * $\bar{c}$

≈ + orx, + ory → $\bar{\Sigma n}$

poscrotate (0, 0, 20, 15 by 30°) ANS 24.8, 2.9 ✓

100 + 102 ~ 202 · 4 = 808 ✗

102 − 100 ~ 2 · 4 = (8 + 100) = 106 ✓

x   org   θ   v, scalar r

Simply a shift

- Possible ~ complete rotations at the end?

Update the rotates / check position table

- Relative points remain!
- Absolute must change!

Route displays ok, but not rotated (Maybe through orig

Force vectors completely 'out'

Posrotate seems to work out

- tested with external data

e.g. $y = 2x^2$ and results are correct

$$\int_{t=0}^{1} (-3t^2 + 40t^4)\, dt = [-t^3 + 8t^5]_0^1 = 7 \Rightarrow -3t^2 = (3x),\ 40t^4 = (5xy\, dy)$$

69, 51

$r(u) = x(u)i + y(u)j + z(u)k$ ~~79, 97, 32, 13~~

=> the position vector of points $P(x,y,z)$. 42.74, -36.85 X (23.14, -22.74)

and $r(u)$ defines a curve 31.95, -47.27 X (12.72, -11

'C' joining points P_1 51.954, -47 → 72, -27

and P_2.

where $U = U_1$ and $U = U_2$ respectively.

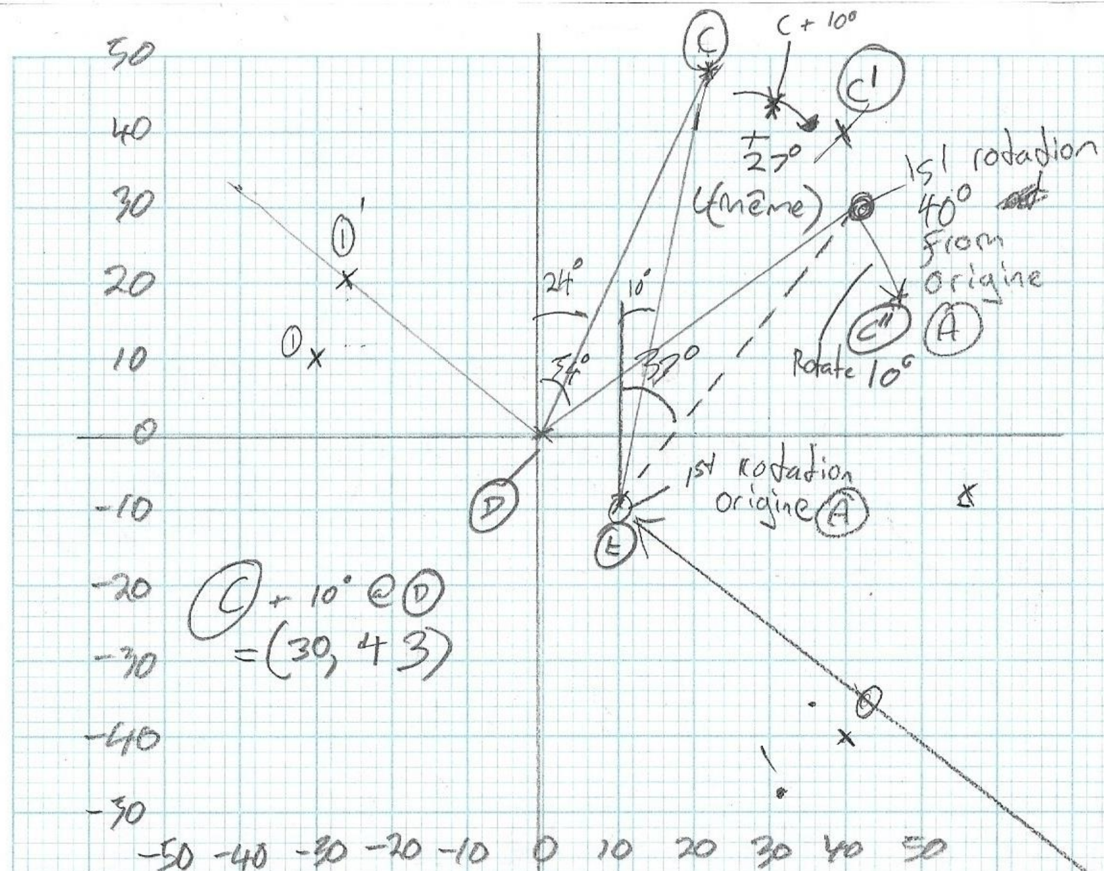
Any intergral that is to be evaluated along a curve is called a line integral. Such integrals can be defined in terms of limits of sums as are the integrals of elementry calculus.

$r(u)$ is a function of points $P(x,y,z)$!

Line integral
$$\int_{P_1}^{P_2} A \cdot dr = \int_C A \cdot d\underline{r} = \int_C A_1\, dx + A_2\, dy + A_3\, dz$$

If A is the Force F on a particle moving along C. C is a closed curve.

$$\oint A \cdot dr = \oint A_1\, dx + A_2\, dy + A_3\, dz$$



40,40 — norm = 56.57 $\theta = \overset{\left(\frac{1}{4}\pi\right)}{0.785}\ (45°)$

@ 100° $= \frac{5}{9}\pi = 1.745\ldots$

$y = 56.57 \cdot \sin(1.745) = 55.7$ ✓

$x = 56.57 \cdot \cos(1.745) = -9.80$

@ 145° (45 + 100) $= \frac{29}{36}\pi = 2.5307$

$y = 56.57 \cdot \sin(2.5307) = 32.45$

$x = 56.57 \cdot \cos(2.5307) = -46.34$

Only that is missing is original θ.

1st rotation about point

C = (20, 48), c' = (40, 40), c'' = (46, 18)

→ θ = 127° @ E → θ = +10° @ D

20,48

If realtive - simply add the rotation

To rotate this point first and then continue with the 'process' rotation

double rotate...

● C → c'' without c' being 'plotted'.

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mat a = Mat b (2:3)
3x1 matrix

= ~~3x1 matrix~~ = rows 2 + 3 of ~~3x1~~ matrix

(0) (0,0) $A \to A'' = +46°, -2.6(1)$

(0') (10,-10) $A \to A'' = +42°, -6.39(1)$

(!) valuedata2 = [valuedata(2:3); 99; valuedata(1:2)]
A42 — 1 — 2 — 3

$A \to A'$ original translation @ 22°

1	2	3	4	5	6	7
13	10	3	4	40	50	11
n	n	n	n	n	n	n

(Idout) ~ (1)

f(1,5)

icurrent = 1

nn = Inf. ncurrent = -Inf

i → idout (and n => ncurrent) and i NEQ icurrent

n < nn ✓ → ncurrent

decrease ~~n~~ how many to find if above zero

return ncurrent as the cut off.

force_group_value = 2

2 = leave of the top 2 (n)

n = number of passes to gather top 2. ~~n~~ n = 1 to find single top number, then the next down etc.

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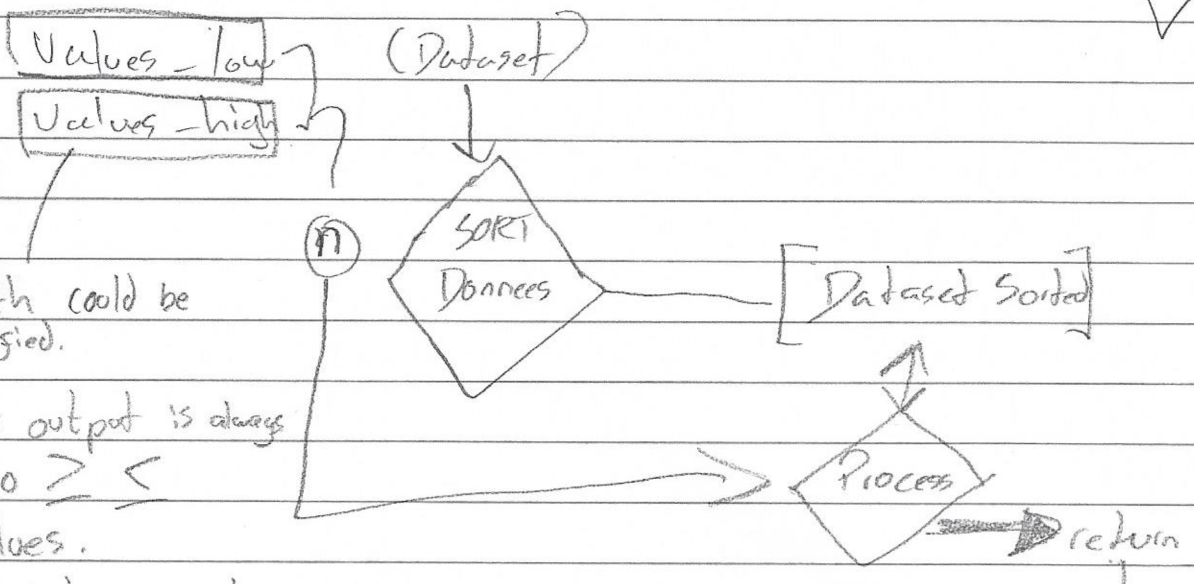
Manual Process - Spike Removal



Both could be specified.
The output is always two ≥ ≤ values.
which maybe -Inf. and +Inf

values of 'Must be greater than' and 'Must be lower than'

Valuesmat —
(1) = Smallest data value
(2) = Largest data value
(3) = Smallest data value - Array Index

ValueValues = ArrayIndexs (4) = Largest data values (Array Index)
Valuedata = Sorted Magnitudes (5) = Smallest data value vectornum for length display
(6) = Largest " " " " " "
(7) = Smallest Array Index to vector to be used for display
(8) = Largest " " " " "

(9) = low original array (sorted)
(10) = high " " "

with normalize function

9 41 026 323 23 43
bouquin@bouquin.ch
www.bouquin.ch

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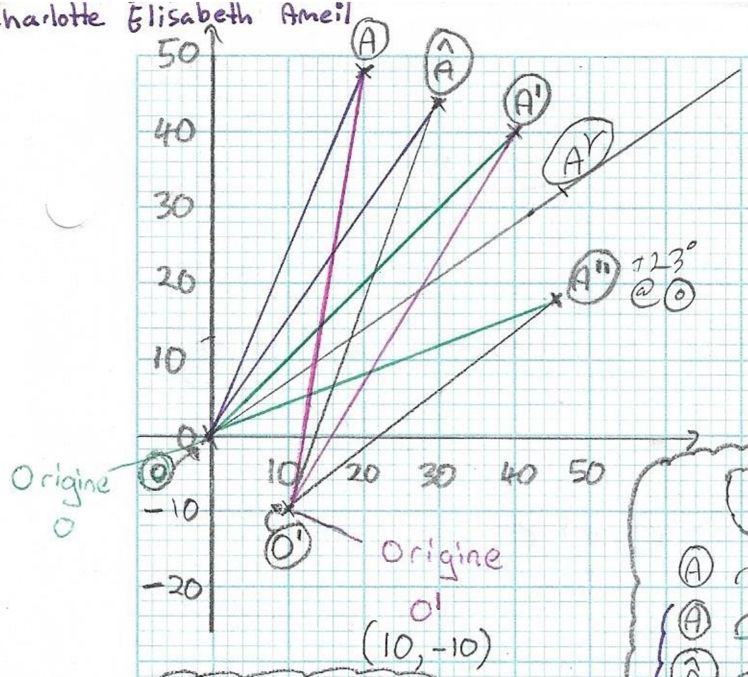


COORDINATES

A = (20, 48)
A' = (40, 40)
A'' = (46, 18)
Â = (30, 43)

les Origines

O @ 0,0
O' @ 10, -10

Ar = (46, 32)

@ O = (0,0)
(A á Â) = 10°
(A á A') = 22°
(A á A'') = 46°

@ O' = (10, -10)
(A á Â) = 10°
(A á A') = 22°
(A á A'') = 42°

Ar @ O = (0,0)
(A á Ar) = 32°
Ar @ O' = (10, -10)
(A á Ar) = 42°

Donnees - Norms

A norm de O' = 58,86
A norm de O = 52
Â norm de O = 52,43
Â norm de O' = 56,65
A' norm de O' = 58,31
A' norm de O = 56,57
A'' norm de O = 49,40
A'' norm de O' = 45,61

Pour Ar

Ar norm de O = 56,04
Ar norm de O' = 55,32

@ de Origines

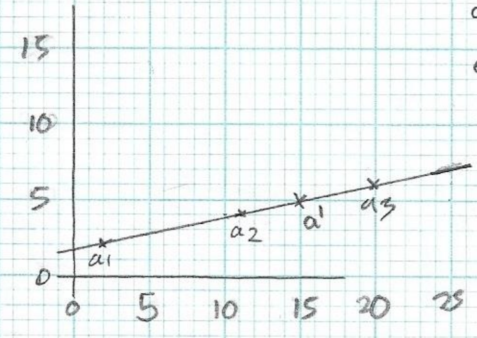
de O 0,0
O á A = 22°
O á Â = 34°
O á A' = 45°
O á A'' = 68°

de O' 10, -10
O' á A = 10°
O' á Â = 20°
O' á A' = 31°
O' á A'' = 52°

Pour Ar
O á Ar = 45°
O' á Ar = 41°

Pour les fleces etc..

$$by = \left[\left(\left(\frac{a_{2y} - a_{1y}}{a_{2x} - a_{1x}} \right) \times a_{2x} \right) - a_{2y} \right] - \left(\frac{a_{2y} - a_{1y}}{a_{2x} - a_{1x}} \right) \times bx$$



$a_{1x}\ a_{1y}\ a_{2x}\ a_{2y}$

$a_1 = (2, 2) - (11, 4)$

$a' = (15, 5)$

$x_L = 9, \quad y_L = 2$

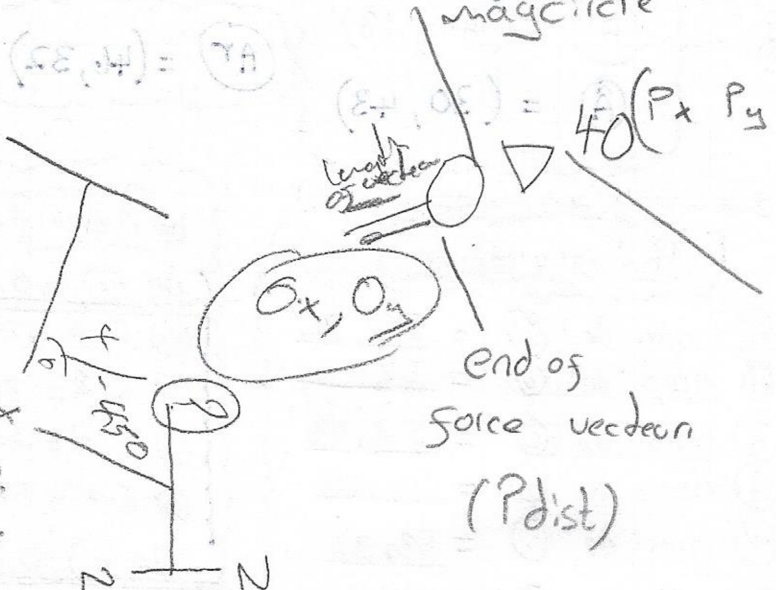
$$\left[a_{1x} + \left(\frac{a_{2y} - a_{1y}}{a_{2x} - a_{1x}} \right) \right] \times \text{scalar}$$

(or 1y)

$a_3 = (20, 6) \therefore |11 - 20| (9), \ |4 - 6| (2)$

$2/9 = 0.222\checkmark \quad +11$

Pdist + tdoot (6 ~ magcircle scalar) -



(Pdist)

(Pdist
+ Magcircle scalar
+ flech py^2 pe^2)

X or y <=> (+X, Z+), (+X, Z-), (-X, Z), =>

(D > as dist / o_x, o_y)

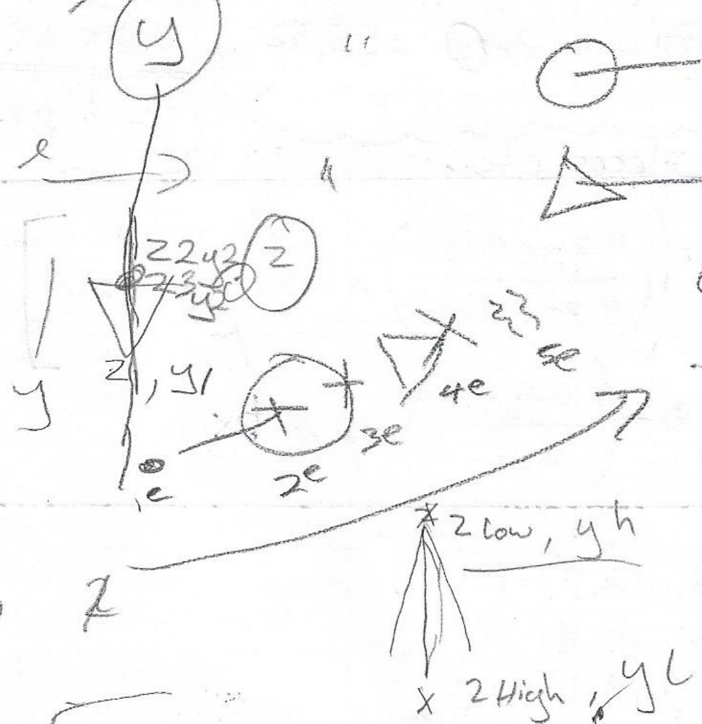
D > avec o_x, o_y ——— v_x, v_y

" ⊖——— V_x, V_y ou O_x, O_y

" ▷——— V_x, V_y + fleche_scalar

ou O_x, O_y + fleche-scalar

ou V_x + (1/2 mag . magcircle scalar)



(z_1, y_1 → z_2, y^2 → z_3, y_2

→ z_1, y_1)

lottie vecteurs v 3+. les fleches

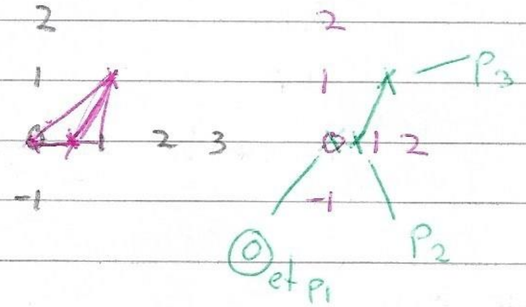
les fleches

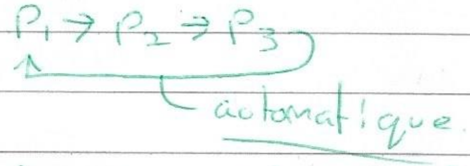
le partie - Polyshape

Pour polyshape, le context nous avons à la

$\begin{bmatrix} x_1, \ldots x_n \end{bmatrix}$ $\begin{bmatrix} y_1, \ldots y_n \end{bmatrix}$ & alors avec cette donnees nous crée la nouvelle desin!

$[0\ .5\ 1], [0\ 0\ 1] = (0,0), (0.5,0), (1,1)$

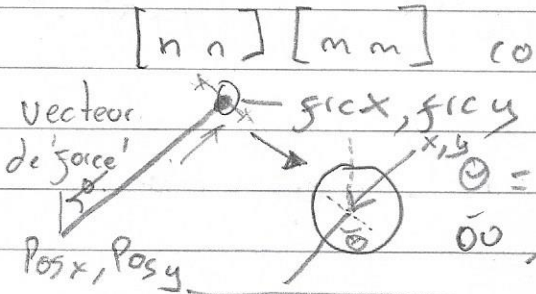




Le dernie point est P_3 à P_1, avec cette point l'ordinateur refleshis le chemin du P_1 (l'origine).

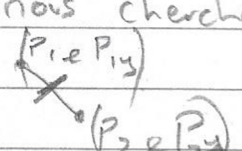
Pour le fleches nous calcul et écrit le graphique dans le domaine de le fonction 'Polyshape'. Après la, nous appelez 'plot' pour rendez dans le écran, dans le fenêtre 'fig'.

[n n] [m m] comme un ratio et nous cherche le

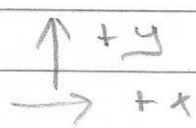


$\theta = (\phi + 90)$ @ x, y

où ϕ = position_map donnees, (° absol)

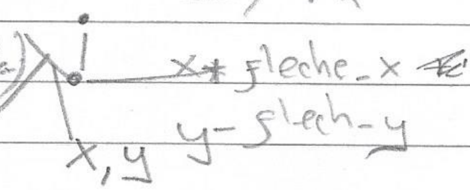


~~cos~~ sin(θ)x, cos(θ)λ



P_1 frc_x_posx x+ scalar, y+ scalar)

frc_y_posy x, xy



les flèches — données

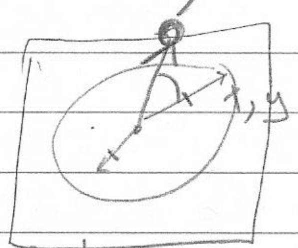
$p_x = -107.2976 \quad p_y = 32.8036$

$p2x = -63.5880 \quad p2y = 84.8946$

$rat = \dfrac{32.8 - 84.84}{(-63.3)-(-107.3)} = \dfrac{-52.04}{43.8}$

(Avec '2')

-1.18 (rat)



Ratio of (x,y) to z

$\overset{(P_x)}{-107.2976} \cdot \overset{(rat)}{(-1.18)}$

$= 126 - \overset{(P_y)}{32} = \overset{(Ofy)}{94.26}$

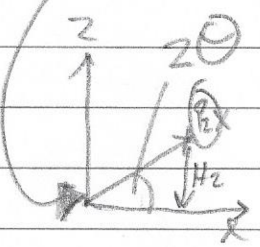
$\overset{(P_{2x})}{-63.588} \cdot \overset{rat}{(-1.18)}$

$=$

$75.03 \quad -94.26 =$

(ZoX, ZoY)

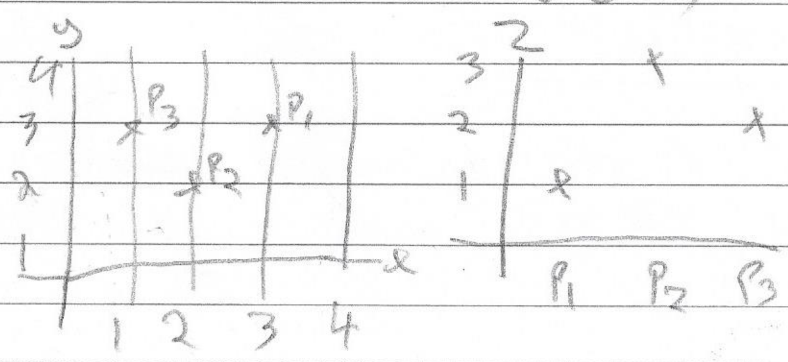
-0.84



$-107.2976 \times -0.84 = 90.221$

$90.221 - 32 = 58$

$-63.588 \times (-0.84) = 53$



~~NO FILTER COEFFICIENT~~

fleche_xx, fleche_y2

$Z=2$

Pe, Py   Pe', Py'

Pe Py   Pe', Py

$10+10=20$

$20/2=10$

fleche_pe1
fleche_py1

fleche_Px2
fleche_Py2

43°

43°

fleche_x1
fleche_y1

$5,5,\ z=1 \qquad 10,10,\ z=2$

$7.5,\ z=1.5$

fleche_px2
= fleche_x1
+ deg 43°
[+ 0.5 display fleche scalar]

(x,y) heading

$(x,y) = \frac{z_{mean}}{2}$

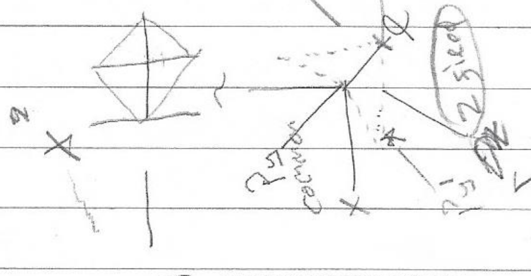
heading

e,g (plane)

$(z_2 - x_1)/2 + x_1$

z=1   5,5

D = 2

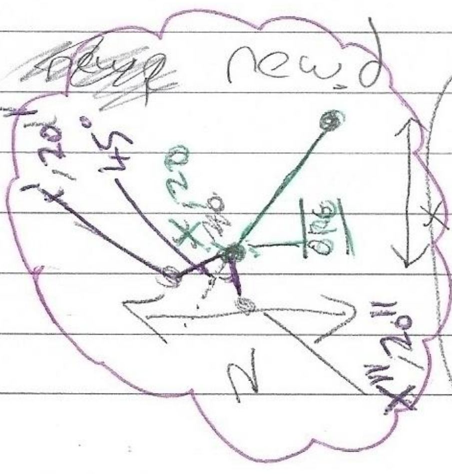


$$Z_n = \left[2 \Big/ \sqrt{(P_{x2}-P_e)^2 + (P_{y2}-P_y)^2} \right]$$

$y = 20$

$z' \to z''$

new d



45°

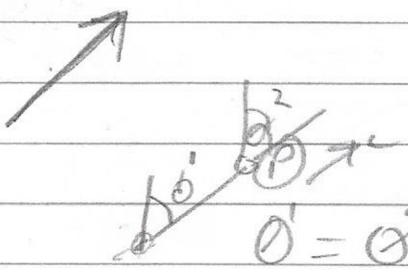
$y = l/20$

$P_1 = 0,30$ $P_2 = 10,50$ $(5,40)$ $(3,36)$

$\frac{20}{-10} = -2 \Rightarrow y = [x \cdot (-2)] + 30$

$(0,0) \rightarrow (20, 8) \rightarrow (15, 6)$

$(0,0) \rightarrow (5,8) \rightarrow (10, 15)$



$y_n = \left[\left(\frac{y_d}{x_d}\right) \cdot x_n\right]$ @ $X_0 = 0$

$\theta^1 = \theta^2$

$\Rightarrow$ @ P

$(x, y) \cdot \cos/\sin$

$\cdot L$

@ $X_0 \neq 0$ $\left(\frac{y_d}{x_d}\right) + (y_0, X_0 = 0)$ $= x', y'$ @ P

$(5, -10) \rightarrow (18, 7) \rightarrow (24.5, 15)$

$\frac{7-(-10)}{18-5} = \frac{17}{13} = 1.3077$ (minus minus)

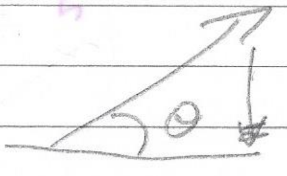
Rat

$5 \cdot 1.3077 = 6.538$ $[-(-10)] = 16.5$ (Rat/0)

$18 \cdot 1.3077 = 23.534 - 16.5 = 7.038$ ✓

$24.5 \cdot 1.3077 = 32.04 - 16.5 = 15.53$ ✓

Z component



Matlab Projet Vecteurs

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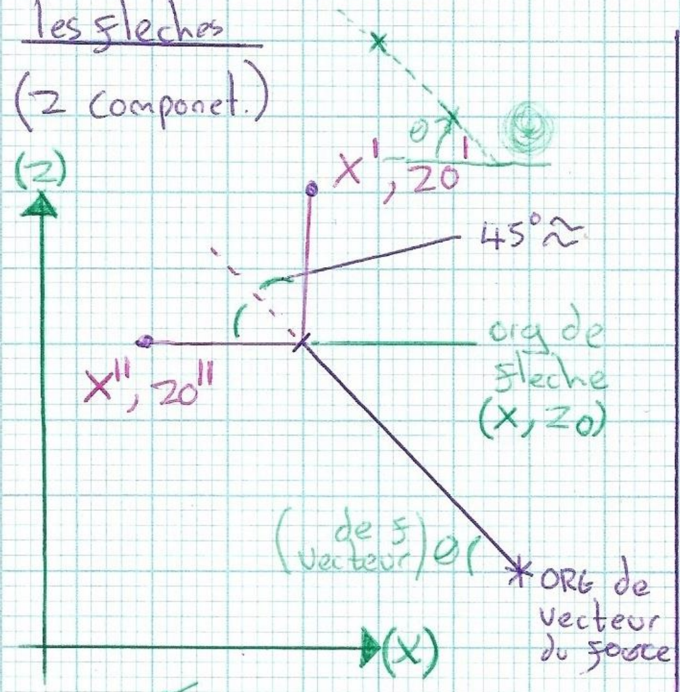
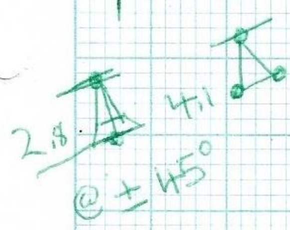
les fleches

(2 componet.)





$y = [\,y_L(@x, z_0)/z_0\,]$

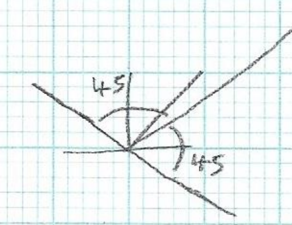
$* z_0'$, $* z_0''$

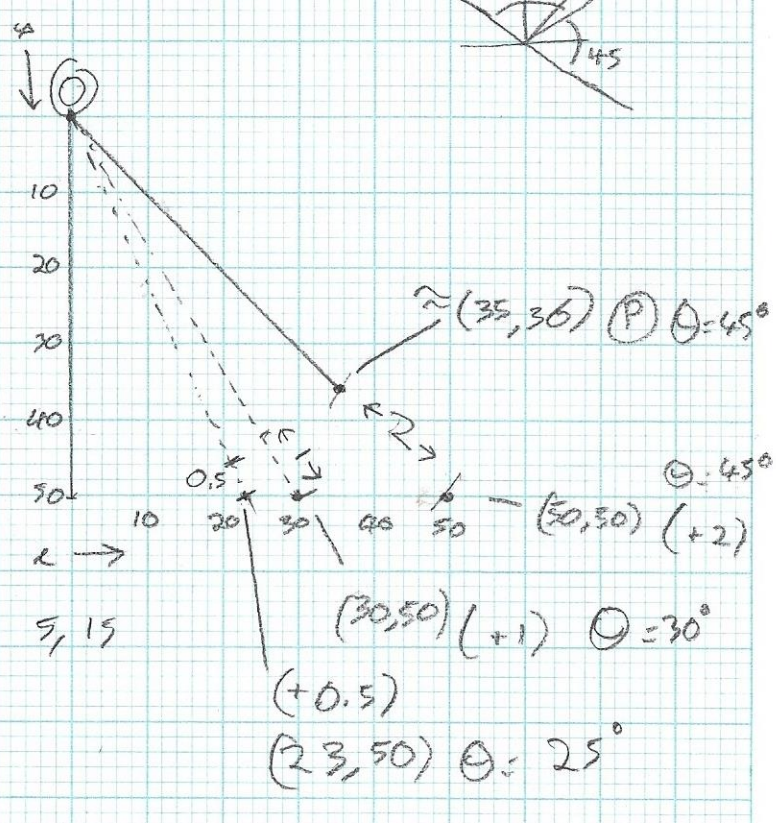
$= y'$, $= y''$

Dans le domaine de 'z' ne utiliseur pas les axis de 'y'. pour les droits de 'z' – cos(~) · (X'L, Z'L)

Pour l'axis 'z' le même choses sont utilliser dans le graphe à côte.

$\sqrt{(x_L)^2 + (y_L)^2}$





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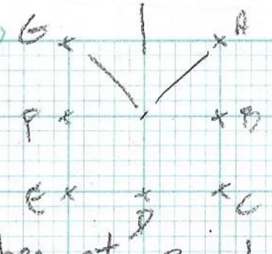
work done = (magnitude of force in direction of motion) • (distance moved)

$(0, 0), (-30, 10)$

Direction of force / direction of movement • distance of movement



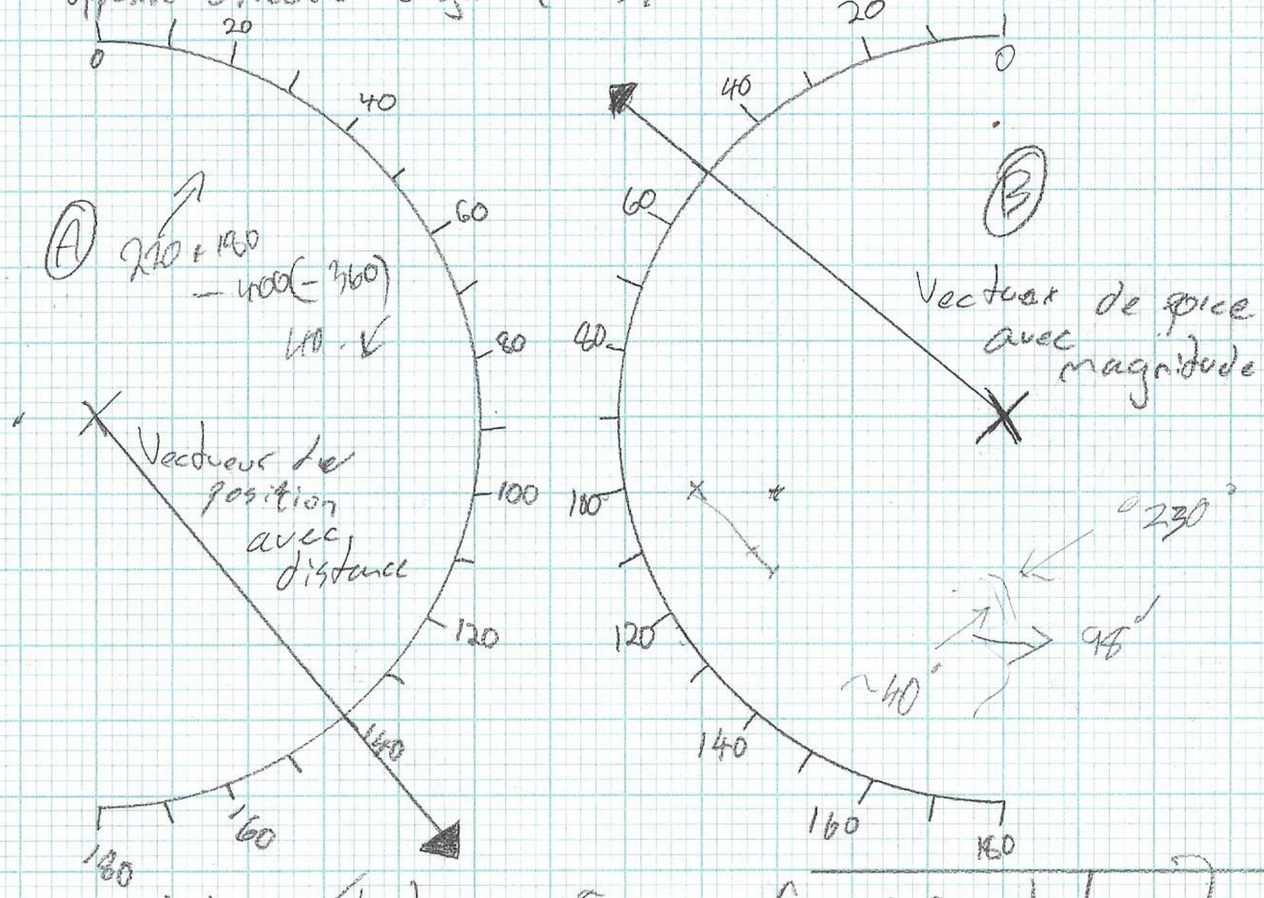
$160° = $ même

$\frac{d}{\alpha}$

Force Relative Calc

Angle of position vecteur • Angle of force vecteur

Addative 100% when equal absolute angles, do subtractive 100% when at equal but opposite direction angles (180°).



- Donnees pour le vecteur de force magnitude sont proposé à constant avec les temps du mouvement de le vecteur du position. Mais pour example une average de cette temps.
- l'assumption pour une value constant dans le même direction.
- Aussi dans les donnes pour force magnitude sont dans le même effect.

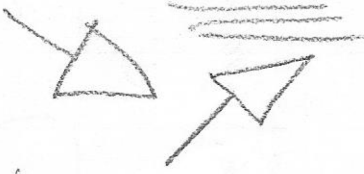
~ plusuis d'infos dans un temps apres à l'addition.

magnitude / distance ~~x~~

A $f(x)$ B

$(\sin(\theta) \cdot \text{distance}) \cdot (\cos(\theta) \cdot \text{magnitude})$

Arrows



Poly Shape

$$\begin{bmatrix} 20 & 10 & 0 \end{bmatrix}$$

$$\begin{array}{ccc} x_1 & x_2 & x_3 \end{array}$$

$$\begin{bmatrix} 10 & 0 & 10 \end{bmatrix}$$

$$\begin{array}{ccc} y_1 & y_2 & y_3 \end{array}$$

$$\begin{bmatrix} x_1 & x_2 & x_3 \end{bmatrix}$$

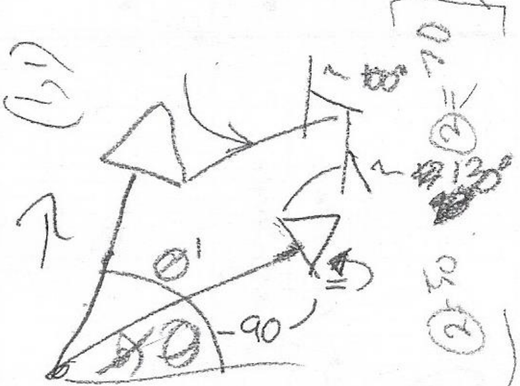
$$\begin{bmatrix} y_1 & y_2 & y_3 \end{bmatrix}$$

RGB Triplets

R	50 – 100
G	25 – 75
B	~~...~~ 50

$50 \rightarrow 0$

$(1022, 360) = 302$



$B = n$

$B(0-50)$

$B:(n/2)$

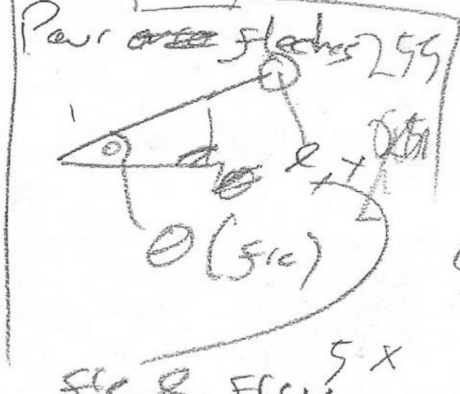
$(4-2) = 2$

$x' = x - n$

$180 + (90-40) = 180 + 50 = 230$

$160 + (90-70) = 180 + 20 = 200$

$x_{pos1} = 20$



5

5x50

sic ℓ, sin

add tokens of display
to key as they are enabled

22 28 22 28

50, 72 || 100, 122 || 150, 172, 200

50, 72, 94 * - 8 (4,3) Normalize cnt = 42

122, 144, 160 <- (Low) m(4,2) cnt = 41

194, 216, 238 -> (High) m(4,1) cnt = 40

266, 288, ~~[illegible]~~ */8 Adaptive (4,5) cnt = 43

49 - (top Line) ~ Superfast display [On/Off] 7,11

display_force_magcircles_scalar 123
display_force_magcircles_neg_growth. ☒
display ~~[illegible]~~ force_neg_2 ☒
~~neg force~~ changes direction ☒
~~[illegible]~~ display_force_neg

[VIEW]

[top] (47)
7,2 (7,3)
display_grid, display_legend, key [top] (46)
display_title [top] (44)
display_axis_labels [top] (45) ☒
7,4
display_color_scale, display_color_scale_title (45)
[top] 48

dlog
(8,8)
1 display_border 123 51
8,4 2 dlog
display_noscale, display_view_el (8,9) (8,10) az (123) 50
(8,6)
display_scale 123 52 display_fixScale allready as button.

as checkbox with display_scale!

• What is lottie vectors?

Lottie Vectors

Lottie Vectors is an application for Matlab that alows you to do some pretty neat things - with vectors. More exactly - displaying them in ways that hopefully will allow you to explore and better understand your vector data.

The basic idea is simple take a vector defined in one of a few different types of data formats and map it on the screen. Add another vector and you start to form a 'route'.

Each route or position vector can be accompanied with a 'force' vector. This can be used to show something acting on a position with direction and magnitude.

Finally you can give each position a tag to display on screen. This could be a common math symbol or greek letter, start/end signposts, or a number of the position either from the begining or after a 'reset'.

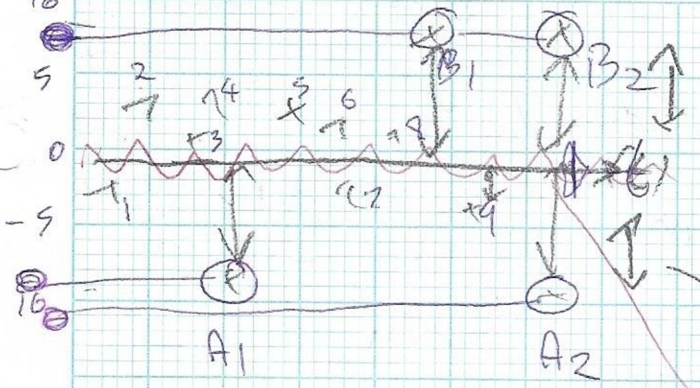
After all the information has been loaded for your dataset. Either passed on the command-line, or in a text file. Lottie vectors displays inside a figure that you can resize, rotate and turn 2D positions into a 3D picture with forces.

Check out the files on the official page and have fun!

Charlotte Ameil - August 2018

LOTTIE
VECTORS

Charlotte Elisabeth Ameil



qi+4 (13) ~ +5, -5 —

ie gap between high values

2e 'gap' around a blank area, such as for eg the baseline

TASK

1) Find large gaps in data between points

2) use as a base line for 'mavy' at first. Then recalculate the base line with some of the extreme points taken away

Dorsoidir (nomo) = ∅ for a value, not yet been taken from the set.

Take away the spike points that effect the 'mavy' the least! at first.

or Most?

Then recalculate baseline

- Keep new version of the data ie record top and bottom value.
- When to stop taking away spikes? When range has 'normalized' within a specified range.

got √ length

$x_1, y_1 \rightarrow x_2, y_2$ ratio 1 √ = 14.14 length

$Xa + yb = 0$

Shortest line 10,10 → 20,20 • M

x=y

25,10 → 50,30

$x = y1.5$

• Keeping

use length on shorter line, on the longer line keeping the longer line's ratio

/ 14 / $\sqrt{x_c^2 + y_c^2}$

norm data — take out peaks by extreme size difference either low or high

TO-DO!

1) Look at spike high count difference between it and next lower

2) Look at spike low count difference between it and next higher

3) Remove spike with highest difference calc

~~Avg-Magnitude changes direction~~

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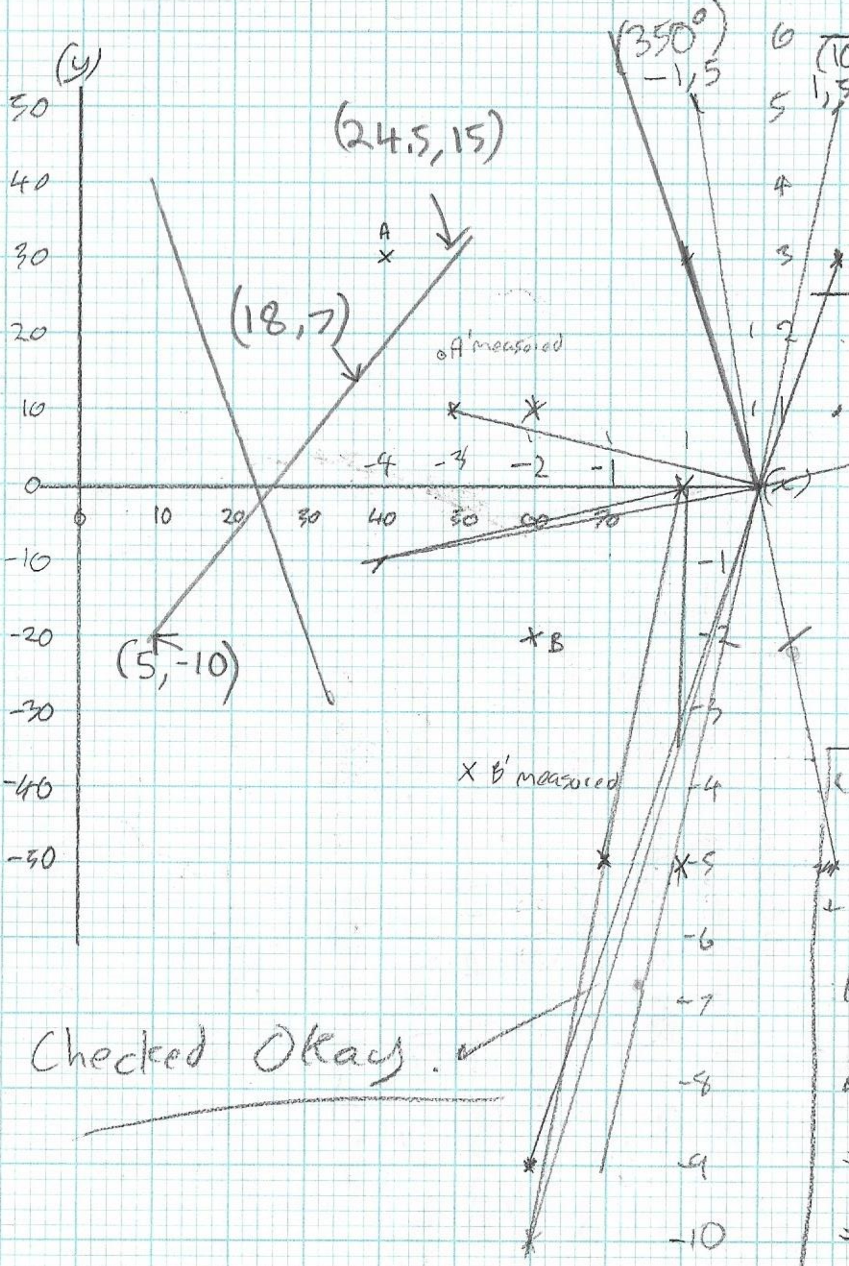


Checked Okay.

(Origine @ 0,0)

- A @ 40, 30
- B @ 60, -20
- Rotate = + 18° (Deg)

[measured]

A norm = 51 , A θ = 53°

B norm = 63 , B θ = 108°

So + 18° =>

A' = @ (48, 17)

B' = @ (51, -38)

working calc. cond:

A = 53°, A' θ = 71°, A norm 50

B = 108°, B' θ = 126°, B norm 63

$A'_x = A_{norm} \cdot \sin(71 \cdot (\pi/180))$

$A'_y = A_{norm} \cdot \cos(71 \cdot (\pi/180))$

$= A'_x = 50 \cdot \sin(71 \cdot \pi/180) = 47.276$

$= A'_y = 50 \cdot \cos(71 \cdot \pi/180) = 16.278$

[Calculated - hand]

A norm = 50

B norm = 63

A θ = 53

B θ = 108

So @ 18° =>

A' = @ (47, 16)

B' = @ (51, -37)

$B'_x = B_{norm} \cdot \sin(126 \cdot (\pi/180))$

$B'_y = B_{norm} \cdot \cos(126 \cdot (\pi/180))$

-2, -10 = 2, 10 -

10/2 = 5

(-2, -10) = 78°

Rotation	Act	Type
45	123	-COS, SIN
90	168	-COS, SIN
135	213	-COS, sin
180	258	COS, SIN / -cos, sin
225	303	-COS, SIN
270	348	-COS, SIN
315	393 (33)	-SIN, COS

ORG = (0,0)

Charlotte Elisabeth Ameil

Assuming: 360 . 360 = 1.1 ; rotation_origine_x 40' , 80°

180 . 360 = -1.1 rotation_origine_y

90 . 360 / 270 . 360 = 0.1

40

étapes pour la rotation

- Cartesian avec (rotation_origine) ⇒ vecteur
- Vecteur change
- Vecteur → cartesien

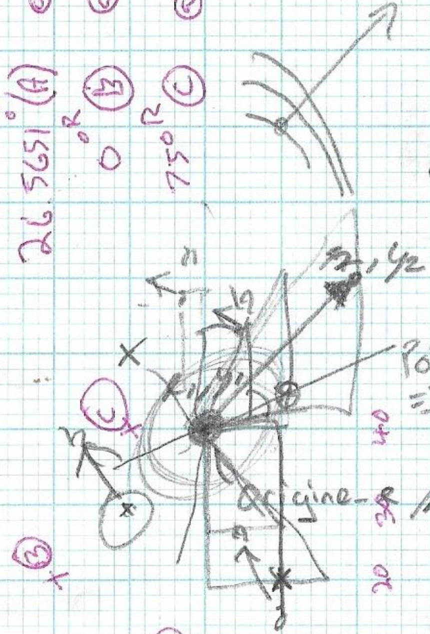
So ((cos/a) . Scalefac)

cd a - b

@ 10, 20 — 26.5651°R (A)

@ 20, 40 — 0°R (B)

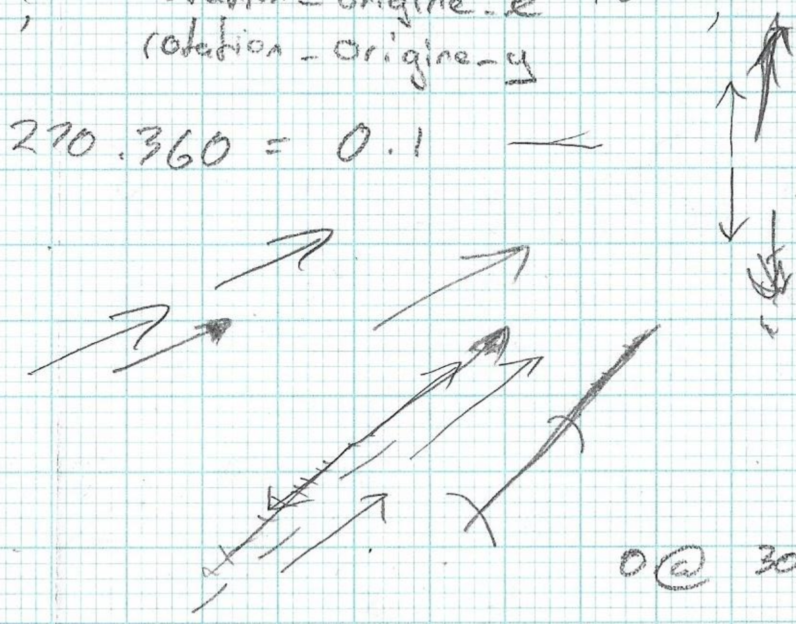
@ 40, 30 — 75°R (C)

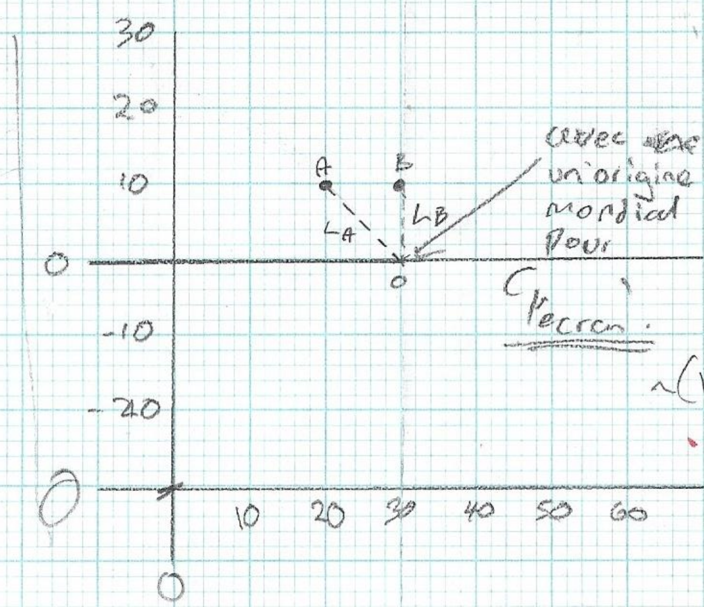


& pos & origine

Point de rotation ⇒ = 0,0 pour get heading

origine_x / y





0 @ 30,0

(A) = 20,10 / (B) = 30,10

(A) θ = ~~45°~~ | (B) θ = 90°

ω = 15°

⇒ A' = 60° | B' = 105°

alors

20

~(1.4) L_A = 14.1421 = $\sqrt{(A_x - O_x)^2 + (A_y - O_y)^2}$

et donc

(A) $\theta = \tan^{-1}\left[\frac{|A_y - O_y|}{|A_x - O_x|}\right]$

Mouv. d'origine = même

40 30 20 10 0

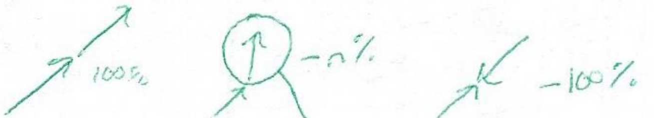
0,0 origine

Mouv d'point

origine = 0,0 et

point = P - O_x, O_y → $\emptyset$

- Calculate the magnitude vector sum of the force vector and the position vector.



for the actual vector sum this value is something like 

test data!

$x1, y1 = 0,0$

$x2, y2 = -n, -n$

$L = \sim +n$

where

$x_2 = -2,0696$

$y_2 = -9,9967$

$xpos2 < 0 \quad (-9)$

$d = 304$

$\Rightarrow xpos = xpos + |xpos2| <$

$xpos = 10 \quad xpos2 = -30$

$= |xpos - xpos2| = 40.$

$\tan^{-1} = 78.35°$

$\Rightarrow xpos = 0 \quad xpos2 = 40$

$x = -2{,}069 / y = -9{,}9967$

$xpos2 = |xpos2| + xpos1$

By 45° : $78 + 45 = 123$

$xpos1 = 0$

$=$

16
-10