start

Input:
- start x, y
- end x, y
- step w, chr.
- rad, slot, less 180, name

- current cover pass 2
- first slot Nbr
- last slot Nbr

Calculate:
- no. of cuts
- remainder partial cut

Calculate:
- datum x, y

i > 1? — yes / no

datum x = ...
initialise X

i = noc? && re i = 0? — yes / no / last cut

Decrement by X_{re}
$X = X - X_{re}$
last cut w re

decrement X

Calculate: x, y
(1), (2), (3), (4), (5)

*(i)
last?
missg

i > 1? — yes
i = noc? — no

calculate r for (1) or (3)
mod plot

calculate (4) → (5)

lst segment CCW

lst segment CW

i = 1 — yes / no

write G1 code
(1)→(2)→(3)→(5)

i = noc — yes / no

write G code
(4) → (5)

Return last x, y

End

(i) Check → noc = 1

Calculate (4) → (5)

datum x, y

0 → step-angle

return only x, y

*(i) Uriented cut
last?

step-angle

θ

x - datum
y - datum

rad. slot path

① ② ③ ④ ⑤ ⑥

start

Linear length   Arc-length

θ angle

x - datum
y - datum
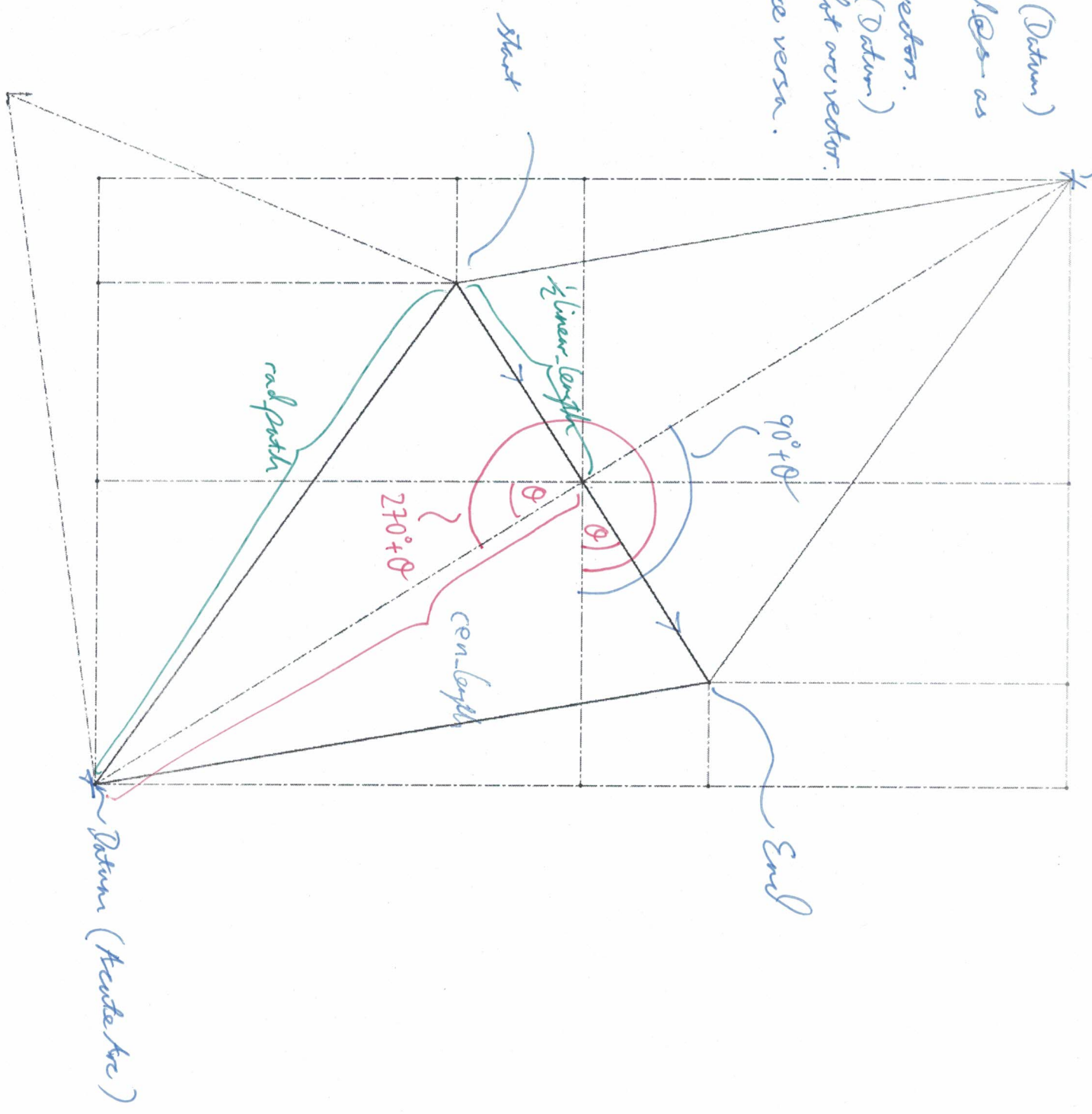
rad. slot path   end

rad path

θ+180°

θ+90°

θ

θ-90°

Notes

- Determine Center of Slot Arc (Datum)
- Resolve vectors using centroid @ as temporary reference point.
- Then resolve to absolute vectors.
- Acute Arc ($\theta \leq 180°$), Center (Datum) will be on right side of slot arc vector.
- Obtuse ($\theta > 180°$) will be vice versa.

Datum (Obtuse Arc)

Datum (Acute Arc)

Start

End

ref path

cen-length

Linear-length

$90° + \theta$

$270° + \theta$

θ

X

Y

Start

Calculate:
① no. of cuts.
② remainder partial cut

Calculate:
Absolute x,y position
for ①,②,③,④

i=1? — yes / no

Calculate:
arc from ⓪ to ①
point Grade

Write Grade to
position ④ or ⓪ → ①

Write Grade to
positions ⓪(①)→②→③→④

i=last? — yes / no

Calculate:
arc from ⑥ to ⑤
write ④ → ⑤ Grade

④ → ⑤ Grade

last slot? — yes / no

Calculate:
④ to ⑤ ①'

Move current cutter position
to ①

first slot? — yes / no
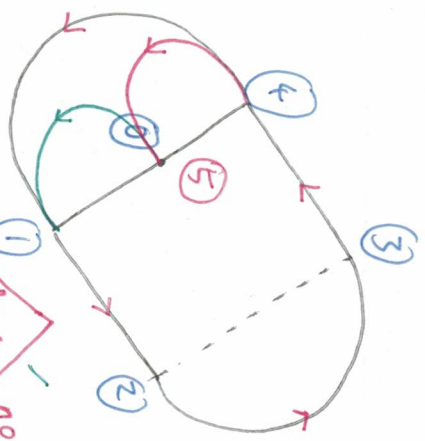
Write Grade

Return (last x, last y)

End

Input:
- start x, y
- end x, y
- step, was für name

- first slot flag -
- last slot flag -

Return end x, end y

last pos? ≠ end pos?

current

rad-arc