(0) LoP = _____

Dec ___°__' (N/S)

GHA ___°__'

iteration #0	iteration #1	iteration #2
Lat_{AP} ___°__' (N/S)	Lat_{AP} ___°__' (N/S)	Lat_{AP} ___°__' (N/S)
Lon_{AP} ___°__' (E/W)	Lon_{AP} ___°__' (E/W)	Lon_{AP} ___°__' (E/W)

(1) LHA = GHA + Lon_{AP}

GHA ___°__'	GHA ___°__'	GHA ___°__'
± Lon_{AP} ___°__'	± Lon_{AP} ___°__'	± Lon_{AP} ___°__'
= t ___°__'	= t ___°__'	= t ___°__'
± 360°00'	± 360°00'	± 360°00'
LHA = ___°__'	LHA = ___°__'	LHA = ___°__'

+ for East, **−** for West
If **t** < 0° **LHA = t + 360°**
if **t** > 360° **LHA = t − 360°**
if 0° < **t** < 360° **LHA = t**

(2)

	0° < LHA <	**90° < LHA <**	**180° < LHA <**	**270° < LHA <**	**360°**
	H = LHA	**H = 180° − LHA**	**H = LHA − 180°**	**H = 360° − LHA**	
	LHA ___°__' = H ___°__'	**179°60'** − LHA ___°__' = H ___°__'	LHA ___°__' **− 180°00'** = H ___°__'	**359°60'** − LHA ___°__' = H ___°__'	
	If **H < 1°** or **H > 89°** choose **Lon_{AP}** to bring **H** within the **1°~89°** range				
W sign rule: **Lat_{AP}** and **Dec** same name	**+W**	**−W**	**−W**	**+W**	
W sign rule: **Lat_{AP}** and **Dec** contrary name	**−W**	**−W**	**−W**	**−W**	

If **Dec** < 1° set **W** = **Dec** skipping tan(Dec)/cos(H) division

(3) tan(W) = tan(Dec) / cos(H)

cos	**cotan**
set **0°**	
	set **Dec**
set **H**	
	read **W**

If **Lat_{AP}** < 1° assume **Lat_{AP}** = 1°

(3a) X = 90° − Lat_{AP} ± W

89°60'

− Lat_{AP} ___°__'

(PD_{AP}) = ___°__'

± W ___°__'

= X ___°__'

X < 90° < X	
Y = X	**Y = 180° − X**
X ___°__' **=** Y ___°__'	**179°60'** − X ___°__' **=** Y ___°__'

If **Y** > 89° choose **Lat_{AP}** to make **Y** < 89°

(4) tan(Az) = cos(W) · tan(H) / cos(Y)

cos	**cotan**
set **W**	
	set **H**
set **Y**	
	read **Az**

Compute **Zn** from **Az.**

Azimuth rules		0° < LHA < 180°	180° < LHA < 360°
Northern latitude	X < 90°	**Zn = Az + 180°** Az ____°__' + 180°00' = Zn ____°__'	**Zn = 180° − Az** 179°60' − Az ____°__' = Zn ____°__'
	X > 90°	**Zn = 360° − Az** 359°60' − Az ____°__' = Zn ____°__'	**Zn = Az** Az ____°__' = Zn ____°__'
Southern latitude	X < 90°	**Zn = 360° − Az** 359°60' − Az ____°__' = Zn ____°__'	**Zn = Az** Az ____°__' = Zn ____°__'
	X > 90°	**Zn = Az + 180°** Az ____°__' + 180°00' = Zn ____°__'	**Zn = 180° − Az** 179°60' − Az ____°__' = Zn ____°__'

if **Az** < 85° or **Lap_{AP}** > 1°

(5a) **tan(Hc) = cos(Az) · tan(Y)**

cos	cotan
set **Az**	
	set **Y**
set **0°**	
	read **Hc**

Use **Zn** and **Hc** for LoP.
Done.

if **Az** > 85° or **Lap_{AP}** < 1°

If **Lat_{AP}** < 1° set **W** = **Lat_{AP}** skipping tan(Lat_{AP})/cos(H) division

(5b) **tan(W) = tan(Lat_{AP}) / cos(H)**

cos	cotan
set **0°**	
	set **Lat_{AP}**
set **H**	
	read **W**

If **Dec** < 1° assume **Dec** = 1°

(5c) X = 90° − Dec ± W

89°60'
− Dec ___°__'
(ZD)= ___°__'
± W ___°__'
= X ___°__'

X < 90°	X
Y = X	**Y = 180° − X**
X ___°__' = Y ___°__'	179°60' − X ____°__' = Y ___°__'

(5d) **tan(Az*) = cos(W) · tan(H) / cos(Y)**
Do not use **Az*** for LoP but calculate **Hc** from it.

(5e) tan(Hc) = cos(Az*) · tan(Y)

cos	cotan
set **Az***	
	set **Y**
set **0°**	
	read **Hc**

Use **Az** from (4) and **Hc** from (5e) for LoP.
Done.