

NAV-ASTRO	S8 - TD NAVIGATION - POSITIONNEMENT	V4.1 -02/22
A. Charbonnel	ATELIER 4 – S'ENTRAÎNER AUX FONDAMENTAUX	2/3

4.0 Préparation du point d'étoiles

On 09 March 2024, your DR position is LAT 39°13.5'S, LONG 108°36.5'W.
Prepare a 3 stars fix (define the time for the observation and choose 3 stars or planets)

4.1 Point d'étoiles et planète

(exo 3.3 – ST-P1)

On June 28th 2024, you are sailing in Indian Ocean.

You are steering course over ground 208°T at a speed of 16,0 knots.
Your dead reckoned position is 10° 00,0' S / 44° 36,0' E at 02 h 40min UT.
Your sextant have an index correction 1,2' on the arc.
The watch correction is +5s
You make the following sight at the eight of 15 m

	Watch time	Hs
Achernar	02h 40min 10s	39° 45,0'
Enif	02h 43min 02s	49° 16,7'
Mars	02h 47min 10s	44° 21,9'

You want to make a fix at 02.40 U.T. / 05.40 Local Time

4.2 Point par le Soleil

(Exo3,1 S2)

On June 30 th 2025, you are sailing in Mediterranean Sea.
You are steering course over ground 120°T at a speed of 10 knots
Your sextant have an index correction 1,4' on the arc.
You make the following sight at the eight of 9,5m. You observe the lower limb of the sun

Time sight (UT)	Hs	Position	
09h 59 min 05s	62° 37,5'	40° 01' N	05° 43' E
11h 58min 31s	72° 43,2'	39° 51' N	06° 05,5' E

You want to make a fix at 11h 59 min UT.

4.3 Variation du compas par la hauteur

On 31 July 1981, at 0604 ZT, in DR position LAT 16° 42.3' S, LONG 28° 19.3' W, you observed an amplitude of the Sun. The lower limb was a little above the horizon, and the Sun was bearing 069.8° pgc. At the time of the observation, the helmsman reported that he was heading 143° pgc and 167 per magnetic compass. The variation in the area was 23° W. What were the gyro error and deviation for that heading ?

4.4 Latitude et variation par la polaire

On 15th April 1981 at 08h 58min UT, DR position was 46° 30'N, 046° 15'W, Polaris was bearing 002° with sextant altitude 46° 30,4'.
The index error is 2,0' on the arc, the height of eye 15m.
Find latitude of observer and compass error

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4.5 Latitude à la méridienne

On 15 november 1981 your 0913 zone time fix gives you a position of $22^{\circ} 30,0'N$ / $068^{\circ} 28,0'W$.

Your vessel is on course $164^{\circ}T$, and your speed is 13,5 knots.

What is the time for the local apparent noon (LAN) ?

At the local apparent noon (LAN), the observed altitude (H_o) of the Sun 's lower limb is $49^{\circ} 46'$.

What is the calculated latitude at LAN ?