

June 1998

Q.1 From 25° 04' S 130° 06' W
 To 20° 12' S 70° 09' W
 P = 59° 57'

Cos AB = Cos Lat A cos Lat B Cos P ± Sin Lat A Sin Lat B
 = 0.425693034 + 0.146293355
AB = 55° 06.'8
 = 3306.7 miles

b)

Cos A = $\frac{\cos 69^\circ 48' - \cos 64^\circ 56' \cos 55^\circ 06.'8}{\sin 64^\circ 56' \sin 55^\circ 06.'8}$

A = S 82° 02' E
 = 097° 58' (T)

Therefore the vertex lies to the East of point A

Sin PV = Sin A sin PA
 = Sin 82° 02' sin 64° 56'
PV = 63° 46.5
Lat V = 26° 13.'5 S

Tan P = $\frac{1}{\cos PA \tan A}$
P = 18° 16.'8 E
Long A = 130° 06' W
Long V = 111° 49.'2 W

c) Tan X = $\frac{\tan PV}{\cos P} = \frac{\tan 63^\circ 46.5}{\cos 6^\circ 21.'2}$
 Lat X = 26° 05.'1 S
 Island = 26° 25.'0 S
Distance due north = 19.9 miles

June 1998

3) a) 15 30 LMT 13th August
2 37 W LIT
18 07 GMT 13th August

Posⁿ: 27° 24' S 39° 17' W

GHA 18hr 88° 49' 3
Inc 07 1 45' 0
GHA. 90° 34' 3
Long. 39 17.0 W
LHA. 50° 17' 3

Declⁿ 14° 28' 2 N
d. 0.8 -0.1
Declⁿ 14° 28' 1 N

A = 41545 N
B = 33067 N
C = 74612 N

$$A = \frac{\tan \text{lat}}{\tan \text{LHA}} = \frac{\tan 27^\circ 24' S}{\tan 50^\circ 17' 3}$$

$$B = \frac{\tan \text{dec}}{\sin \text{LHA}} = \frac{\tan 14^\circ 28' 1}{\sin 50^\circ 17' 3}$$

303.5 (T)

303.5 (G)

0° Gyro error

$$\tan A_2 = \frac{1}{C \times \cos \text{lat}} = \frac{1}{0.74612 \times \cos 27^\circ 24'}$$
$$= N 56.47884 W$$

A₂ = 303.5 (T)

303.5 (T)

327° 0 (C)

23.5 W Compass error

22.0 W Var.

1.5 W Deviation

Azimuths

advantages

- 1) Accurate time from Chronometer
- 2) Mod altitude body gives best result and allows reasonable error in own D.R. without error in Azimuth.
- 3) High altitude gives small Zx and azimuth error for small error in D.R. and difficulty in measuring on azimuth mirror

Amplitude.

Amplitude is bearing at rising or setting occurs when centre of sun is on rational horizon

Rational horizon is parallel to sensible horizon so amplitude should be taken when centre of sun is on sensible horizon.

