

Answer on Question#38506 – Physics - Other

FIU is located roughly at 25° 45' 9" N, 80° 22' 40" W. How many nautical miles is FIU from the equator?

Solution:

$R = 6300\text{km}$ – radius of Earth;

On the sphere the normal passes through the centre and the latitude (φ) is therefore equal to the angle subtended at the centre by the meridian arc from the equator to the point concerned. If the meridian distance is denoted by $m(\varphi)$ then the distance from equator to FIU (equation for the length of the sector; α – angle in radians):

$$D = \alpha R = \pi \cdot \frac{\varphi}{180^\circ} \cdot R = \pi \cdot \frac{25^\circ 45' 9''}{180^\circ} \cdot 6300 \text{ km} = 2832\text{km} = 1530 \text{ nmi}$$

Answer: the distance from equator to the FIU is equal to 1530 nmi.