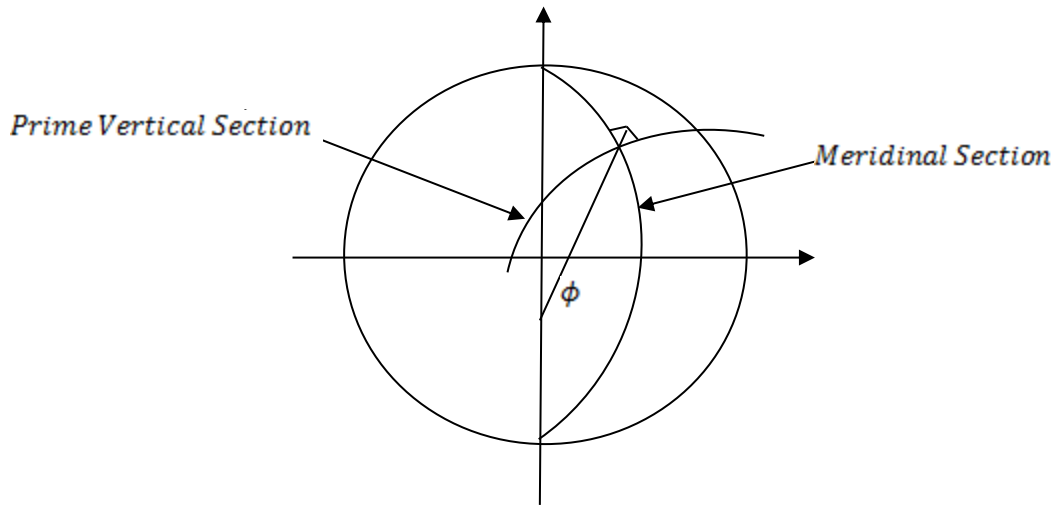


## Calculation of the Meridian and Prime vertical radius



*Figure: Meridian and Prime vertical sections.*

$$M = \frac{a(1-e^2)}{(1-e^2 \sin^2 \phi)^{3/2}}$$

$$N = \frac{a}{\sqrt{1-e^2 \sin^2 \phi}}$$

Where,

$a$  = Semi major axis

$e$  = Eccentricity

$\phi$  = Geocentric latitude

Mean radius of the ellipsoid over the selected area ( $R$ ) =  $\sqrt{MN}$

Where,

M= Meridian Radius of the curvature

N= Radius of the Prime vertical section