

On a spherical triangle whose interior angle sum is 360 degrees

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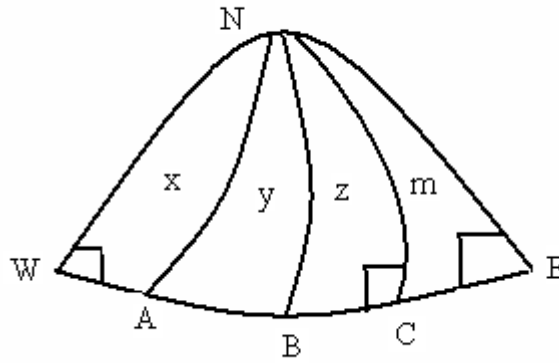
Abstract

In this journal [9] the author has proposed that there exists a spherical triangle whose interior angle sum is equal to 360 degrees. In this work, the author gives a proof for his proposed theorem.

Key words: Euclid, Elements, postulates, non-Euclidean geometries, Gödel's incompleteness theorems.

MSC: 51 M14

Construction



Spherical Figure 1

In the above spherical figure, the angles at W , A , B , C and E are right angles. s, t and u denotes angles WNB, ANC and BNE respectively.

$$x + y = 2v + s \quad (3)$$

$$y + z = 2v + t \quad (4)$$

$$m + z = 2v + u \quad (5)$$

(4) – (5) gives,

$$m + t = y + u \quad (6)$$

Squaring (3),

$$x^2 + y^2 + 2xy = 4v^2 + s^2 + 4vs \quad (3a)$$

Squaring (6),

$$m^2 + t^2 + 2mt = y^2 + u^2 + 2yu \quad (6a)$$

Adding (3a) and (6a),

$$x(x+y)+xy+(m+2v)(m-2v)+(t+s)(t-s)+2mt-u(y+u)-yu-4vs=0$$

$$x(x+y)+y(x-u)+2mt-u(y+u)+2mt-4vs=0$$

Applying (3) in the first factor, and (6) in the third factor we have,

$$x(2v+s)+y(x-u)+2mt-um-ut-4vs=0$$

$$2v(x-s)+s(x-2v)+y(x-u)+m(t-u)+t(m-u)=0$$

From (3) we have, $x - s = 2v - y$ and $x - 2v = s - y$. Assuming these values in the above relations,

$$2v(2v - y) + s(s - y) + y(x-u) + m(t-u) + t(m-u) = 0$$

$$\text{i.e } y(x - u - s - 2v) + 4v^2 + s^2 + m(t-u) + t(m-u) = 0$$

$$\text{Assuming (3) in the first factor, } -y(y + u) + 4v^2 + s^2 + m(t-u) + t(m-u) = 0$$

Putting (6) in the first factor, $-y(m+t) + 4v^2 + s^2 + m(t-u) + t(m-u) = 0$

i. $e 4v^2 + s^2 + m(t-u - y) + t(m-u - y) = 0$

Once again putting (6) in the last two factors, $4v^2 + s^2 - m^2 - t^2 = 0$ (7)

We can make construction such that $x = z$ (8)

(3) – (4) gives $x - z = s - t$ (9)

Applying (8) in (9) we get that $s = t$ (10)

Putting (10) in (7) we have $m = 2v$ (11)

Discussion

Let us recall that Maxwell's electromagnetic theory predicted that light is electromagnetic wave. And Dirac's equations predicted anti particles. Similarly eqn. (11) confirms that it is possible to construct a spherical triangle whose interior angle sum is equal to 360 degrees. Hereafter, it is up to physicists to apply the author's concept to physics and cosmology.

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