

---

# On Applied Algebra

**S. Kalimuthu**

*SF 211 & 212/4, Kanjampatti P.O, Pollachi Via,  
TamilNadu – 642 003, India  
Email: nineteen4@gmail.com*

## Abstract

By the application of abstract algebra the famous unsolved classical problems trisection of an angle, squaring the circle, duplicating the cube and drawing a regular septagon were shown not possible to solve.. On the other hand, in this work, the application of classical algebra proposed a proposition for the origin of a new field of geometry.

**Key Words:** Euclid; elements; postulates; triangles; angles; algebra  
**MSC:** 51 M04, **PACS:** 02.40.Dr

## Construction

In the Euclidean construction as shown in figure 1,  $e$ ,  $s$ , and  $w$  denote the sum of the interior angles of triangles ABD, ADE and AEC respectively. And let  $g$  refers to the sum of the interior angles of triangle ABC. Let us assume that the sum of the interior angles of an Euclidean triangle is not a constant.

$$\text{Let } e+w = k+n \quad (1)$$

$$e+g = k+o \quad (2)$$

$$\text{and } s+g = k+r \quad (3)$$

where  $k$ ,  $n$ ,  $o$  and  $r$  are positive and real.

$$(1) - (3) \quad \text{gives} \quad e+w+r = n+s+g \quad (4)$$

$$\text{Squaring (4), } e^2+w^2+r^2+2ew+2er+2wr = n^2+s^2+g^2+2ns+2ng+2sg \quad (5)$$

$$\text{i.e., } (e-g)(e+g)+(w-n)(w+n)+(r-s)(r+s)+2ew+2er+2wr = 2ns+2ng+2sg \quad (5a)$$

$$\text{From (1) we get } w-n = k-e \quad (1a)$$

$$\text{From (3) We have } r-s = g-k \quad (3a)$$

Applying (2), (1a) and (3a) in the first, second and third factors respectively in (5a),

$$\begin{aligned}
& (e-g)(k+o) + (k-e)(w+n) + (g-k)(r+s) + 2ew + 2er + 2wr = 2ns + 2ng + 2sg \\
& k[e-g + w+n-r-s] + o(e-g) - e(w+n) + g(r+s) + 2ew + 2r(e+w) = 2n(s+g) + 2sg \\
& \text{Replacing } s+g \text{ by } k+r \text{ and } e+w \text{ by } k+n \quad [ \text{ See eqns (3) and (1) } ] \\
& K[k+n - k-r + n-r] + o(e-g) - e(w+n) + g(r+s) + 2ew + 2r(k+n) = 2n(k+r) + 2sg \\
& \text{Simplifying } 2k(n-r) + o(e-g) + e(w-n) + gr + 2rk = 2nk + sg \\
& \text{i.e.} \quad o(e-g) + e(w-n) + g(r-s) = 0 \quad (6) \\
& \text{From (1)} \quad w-n = k-e \quad (1b) \\
& \text{From (3)} \quad r-s = g-k \quad (3b)
\end{aligned}$$

Assuming (1b) and (3b) in (6)

$$\begin{aligned}
& o(e-g) + e(k-e) + g(g-k) = 0 \\
& \text{i.e.} \quad e(k+o) - e^2 + g^2 - g(k+o) = 0 \quad (7)
\end{aligned}$$

Eqn (7) is quadratic in g.

$$\therefore g = \frac{k+o \pm [(k+o)^2 + 4e^2 - 4e(k+o)]^{1/2}}{2}$$

Putting  $e+g$  for  $k+o$  [ See eqn (2) ]

$$g = \frac{e+g \pm [(e+g)^2 + 4e(e-e-g)]^{1/2}}{2}$$

$$\text{i.e.} \quad g = \frac{e+g \pm (e-g)^2}{2}$$

$$\text{i.e.} \quad g = \frac{e+g \pm (e-g)}{2}$$

We are totally and purely free from the fetters of the laws of quadratic eqns to assume positive value in (7)

$$\text{So, } g = \frac{e+g+e-g}{2} \quad (8)$$

$$\text{i.e.} \quad g = e$$

From (9) we get that the angles sums of triangles ABD and ABC are equal.. Consequently we get that the sum of the interior angles of triangle ADC is equal to two right angles. (9)

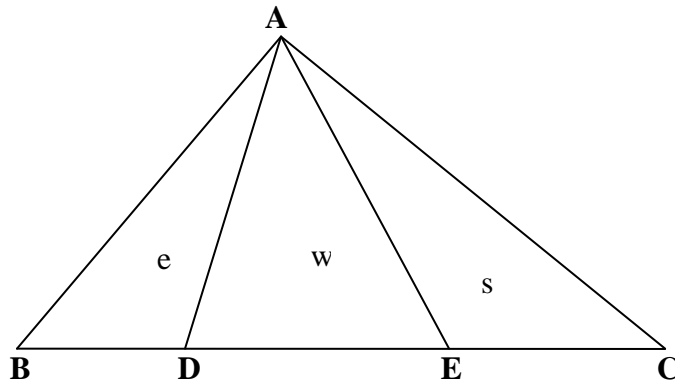


Figure 1 (Euclidean)

## Discussion

Needless to say, the consistent models of non – Euclidean geometries demonstrate that the parallel postulate cannot be deduced from the first four postulates. But in this work, we have derived  $e = g$  without assuming Euclid's fifth postulate. So, our result is consistent. *The author has studied this problem for more than 25 years and published several consistent findings in international peer reviewed journals.* [1- 7] So, this is another result and data. As I have mentioned in my previous works, further probes will give rise to a new field of science. This shocking result is due to the application of classical algebra.

## References

- [1] S.Kalimuthu : (2008a) , On the new branch of mathematical science, J. of maths. and Stats., 4 ( 2) pp 122 – 123, 2008  
<http://www.scipub.org/fulltext/jms2/jms242122-123.pdf>
- [2] S.Kalimuthu : (2008b) , On the new branch of mathematical science Part 2, J. of and Stats., 4 ( 3) pp 122 – 123, 2008  
<http://www.scipub.org/fulltext/jms2/jms243148-149.pdf>
- [3] S.Kalimuthu : ( 2009 a ) , The parallel postulate – Return of the roaring Lion, Ind.J.Sci. and tech., 4 (3) pp 16 – 22, 2009  
<http://indjst.org/archive/vol.2.issue.4/apr09kalimuth.pdf>
- [4] S.Kalimuthu : ( 2009 b ) , Pretty algebra, Nature and Science, Marsland Press, New York, 7 (6), pp 86 – 89, 2009  
[http://www.sciencepub.net/nature/0706/12\\_0822\\_HANDSOMEHANDSOME\\_ns0706.pdf](http://www.sciencepub.net/nature/0706/12_0822_HANDSOMEHANDSOME_ns0706.pdf)
- [5] S.Kalimuthu : ( 2009 c ) , Beautiful geometry, Nature and Science, Marsland Press, New York, 7 (7), pp 88 – 89, 2009  
[http://www.sciencepub.net/nature/0707/13\\_0874\\_kalimuthu\\_ns0707.pdf](http://www.sciencepub.net/nature/0707/13_0874_kalimuthu_ns0707.pdf)
- [6] S.Kalimuthu : ( 2009 d ) , The search for a new field of mathematics, Nature and Science, Marsland Press, New York, 7 (6), pp 32 – 40, 2009  
[http://www.sciencepub.net/nature/0707/13\\_0874\\_kalimuthu\\_ns0707.pdf](http://www.sciencepub.net/nature/0707/13_0874_kalimuthu_ns0707.pdf)
- [7] S.Kalimuthu: ( 2009 e ) For the origin of quantum geometry, General Science Journal <http://wbabin.net/physics/kalimuthu22.pdf>

More Articles

Millennium Relativity home page