Scientific Research and Essay Vol. 4 (11), pp. 1408-1409, November, 2009
Available online at http://www.academicjournals.org/SRE
ISSN 1992-2248 © 2009 Academic Journals

Short Communication

Application of computer magnification to geometry

M. Sivasubramanian[1]*, L. Senthil kumar[1], P. Periasamy[2] and S. Kalimuthu[3]

[1]Department of Mathematics, Dr. Mahalingam College of Engineering and Technology, Pollachi, Tamilnadu-642003, India.
[2]Department of Mathematics, Kamaraj College of Arts and Science, Tuticurin, Tamilnadu, India.
[3]212/4, Kanjampatti P.O. Pollachi via, Tamilnadu-642 003, India.

Accepted 28 September, 2009

Nowadays, computer science dominates all fields. It has become a part and parcel of human beings. In this work, the authors attempt to solve an unsolved problem in geometry by applying computer magnification technique.

Key words: Euclid, elements, postulates, non-Euclidean geometries, computer magnification.

INTRODUCTION

The fifth Euclidean postulate problem in geometry is 2300 years old. Till the end of 19th century, mathematicians trotted their mind to solve this famous problem, but their efforts yielded no results. It was established by Gauss, Riemann, Bolyai and Lobachevsky (Effimov, 1972; Smilga, 1972) that deducing the fifth postulate from the first four postulates is not merely difficult but impossible. In this work, by the application of computer magnification, the authors attempt to locate a solution.

Construction

By using computer technology, draw a triangle ABC as shown in Figure 1. Magnify this triangle and let it be A'B'C' as shown in Figure 2. On A'B' make A'D such that A'D = AB. On A'C', cut off AE such that A'E = AC. Join D and E.

RESULTS

It is well known that in magnification the angles are preserved. So, angles BAC and B'A'C' are equal.

By SAS correspondence, triangles ABC and A'DE are congruent (1)

So, angle ABC = angle ADE (1a)

and angle ACB = angle AED (1b)

*Corresponding author. Email: ms_mahalingam@yahoo.co.in.

Since the angles are preserved in magnification triangle,

ABC is similar to triangle A'B'C' (2)

From (1) and (2), we get that,

angle A'DE = angle A'B'C' (3)

and angle A'ED = angle A'C'B (4)

Since A'DB' and A'EC' are straight angles, we get that angles

A'DE + EDB' = A'ED + DEC' = 180° (5)

Analyzing (3), (4) and (5), we get that the sum of the interior angles of quadrilateral EDB'C' is equal to four right angles (6)

DISCUSSION

Formula 6 proves Euclid's fifth postulate (Effimov, 1972; Smilga, 1972). We have previously given another proof for this problem (Sivasubramanian and Kalimuthu, 2008). Since magnification phenomenon is consistent, (6) is also consistent. The impossibility made possibility means that there is something in this problematic problem. Further studies will unlock the hidden treasures and give birth to a new field of mathematical science.

ACKNOWLEDGEMENTS

The authors wish to thank the Chairman, Emeritus Dr. N.

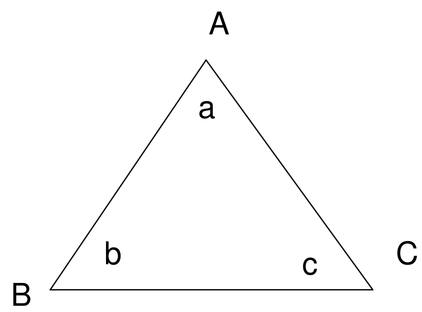

Figure 1. Triangle ABC.

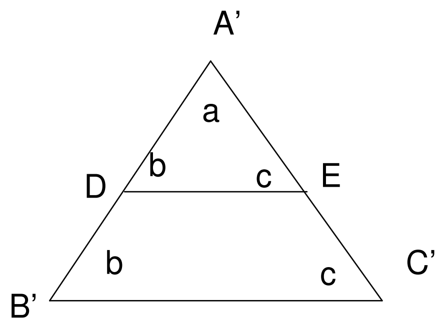

Figure 2. The magnification of triangle ABC.

Mahalingam; Chairman, Shri. M. Manickam; the Correspondent, Shri Shankar Vanavarayar; the Secretary, Prof. C. Ramasamy; the Director (Academic), Dr. S. Vijayarangan; the Principal, Dr. V.V. Sreenarayanan and the HOD of Mathematics, Dr. M. Palanivel of Dr. Mahalingam Csollege of Engineering and Technology, Pollachi, Tamilnadu, India-642003, for their perpetual encouragement for the preparation of this paper.

REFERENCES

Effimov (1972). Higher Geometry. Mir Publishers, Moscow. pp. 1- 30.

Sivasubramanian M, Kalimuthu S (2008). "On the new branch of mathematical science". J Maths Stat 04(2): 122-123.s

Smilga (1972). In the search for beauty. Mir Publishers, Moscow. pp. 1-50.