AN ALTERNATIVE TO PYTHAGOREAN THEOREM & AN ARITHMETIC EVIDENCE TO PROVE COSMIC Pi

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Abstract

Usually, the length of the diagonal of square is obtained with the help of Pythogorean theorem. In this paper the circumference of an inscribed circle finds the length of the diagonal of its superscribed square. The present π number is not an exact number. In this paper it is identified and proved that Cosmic π is the true π and exact π number.

Keywords: Circle, Circumference, Square, Side, Diagonal, Pi.

Introduction

Pythagorean theorem of Pythagoras (572 – 497 BC) is 2500 years old. It was known to Indians even much earlier to Pythagoras. Sometimes, it is called "Baudhayana theorem". However, with the introduction of $\sqrt{2}$ by Hippasus of Metapontum this theorem got its full life. In this paper a new approach is adopted and is real. The diagonal length of a square is calculated with the help of perimeter of its inscribed circle. And thereby diagonal and circumference have become inseperable geometrical entities. It is a new truth. People reject this truth outright. They insist a rigorous proof. Life begets life. A correct entity alone gives another correct entity. As circumference gives the exact length of the diagonal, it means both are correct. Where is the necessity for a proof? Just because one is a curve (circle) and another one (diagonal) is a straight line, it can not be construed as two unrelated entities. In Hindu philosophy, speaking about universe, it is said **Sarvam Mithya** and it means everything is an illusion. Modern Science also says everything is from nothing.

Coming to circle, its circumference is an endless – arc. This arc is without two terminal ends. This is the reason why a circle gets itself accommodated in the square maintaining a fixed distance from its center. The diagonal is a straight line having two terminal ends. Two equal diagonals keep the perimeter of the square as 4-sided, 90^0 angular entity. So, both square and its inscribed circle are aligned perfectly well. Why should we make them into two different things? When $\sqrt{2}$ is a necessity for diagonal why not for circumference of circle also? Is there any rule that $\sqrt{2}$ should be limited to diagonal only and the same $\sqrt{2}$ a taboo for circle? We have constructed an artificial wall between diagonal and circumference. We came 100 thousand years ago. But stars and planets which are spherical are 13-14 billion years old. It means, Geometry of Cosmos (Cosmometry) is much older than Geometry of Earth. Mathematics should be the branch of Cosmometry. Man invented mathematics. It can not claim superiority over Cosmometry (or even Geometry, in much smaller scale).

Purpose of this paper

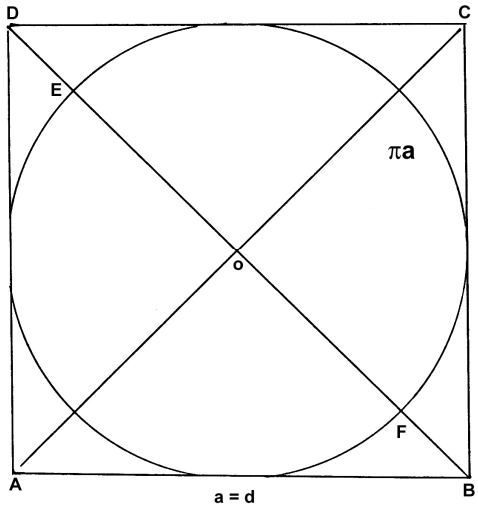
We have been following 3.14159265358…. as π number in the last 2000 years, since the days of Archimedes of Syracuse. It is a limit π. In fact, it represents polygon. It is not an exact value. This number is attributed to circle based on the concept of "Limit". This author has felt why not we obtain an exact π value. After a very deep study and analysis, this author came to the conclusion that the exact π can be obtained only when we depend purely on the radius of the circle. Second point is, that one has to ignore the history to study the circle in its right perspective. Hence, it took for this author 26 years (on and off study since 1972 to 1998) and next 19 years (continuous 24-hr day and night study and search) to find the exact π value. The value is $\frac{14-\sqrt{2}}{4}$.

During his journey he accidentally discovered that the diagonal length of the superscribed square about a circle too can be obtained with the help of the

perimeter of the circle. It is the second method next to Pythagorean theorem for a diagonal length. This discovery has helped us that circle and square are same basically, may be different superficially. The newly discovered mathematically equation $14a - 4\pi a = \sqrt{2}a$ where a = side of square is a fundamental mathematical truth.

Procedure

1. Square = ABCD, Side = AB = a
2. Diagonal = BD = AC = $\sqrt{2}$ a
3. Inscribe a circle in the square
4. Diameter = EF = d = Side = AB = a
5. Circumference = $\pi d = \pi a$
6. From the earlier study it is confirmed that the real π is $\frac{14-\sqrt{2}}{4} = 3.14644660941.$ And it finds the length of diagonal, of its superscribed square also, exactly.



It was thought yet another method, an impossible idea, for diagonal

7. So, circumference = $\pi d = \pi a$, where $\pi = \frac{14-\sqrt{2}}{4}$

8. Yes, we have only one way till now to find the length of the diagonal. And it is by applying the following formula $AB^2 + BC^2 = AC^2$

9. The alternative way is found now and is by using the following equation

$14a - 4\pi a =$ diagonal length $\left(\sqrt{2}a\right)$

$$14a - \left(4 \times \frac{14 - \sqrt{2}}{4}\right)a = \sqrt{2}a$$

Where $\pi = \frac{14 - \sqrt{2}}{4}$

10. The above equation combines both circumference and diagonal as one geometrical entity. Pythagorean theorem and π constant are like mass and energy of Cosmos, one from the other in the both ways.

Circumference $\rightleftharpoons$ Diagonal

As we are getting correct diagonal length from the above π value we are compelled to accept that $\pi = \frac{14 - \sqrt{2}}{4}$ is also correct one.

11. So, the real π equal to $\frac{14 - \sqrt{2}}{4}$ also finds the correct value of diagonal.

12. This is the first time after 2500 years that there is an alternative to Pythagorean theorem.

13. It is a very revolutionary concept in combining square and its inscribed circle by their diagonal and circumference in finding their individual lengths based on

a) Side = Diameter = a = d

b) Diagonal = $\sqrt{2}$ a and

c) Circumference = πa

14 sides (14a) – 4 circumferences (4πa) = Diagonal ($\sqrt{2}$ a)

where the π value is $\frac{14 - \sqrt{2}}{4}$

14. The above equation does not require any proof. Because, the correct diagonal length obtained certifies that π value used for perimeter of circle is also correct. The equation is very simple, very brief and very basic in combining square and its inscribed circle.

Part – II

Arithmetic Evidence to Prove Cosmic π is Real one

In the literature we have e^{π} and π^{e}. $\frac{4\pi}{4-\pi}$ is yet another example in a different way. On the advise of some professors, a non-geometrical approach is attempted here to find the presence of Cosmic π equal to 3.1464466….

Arithmetic formula

$$\left(\left\{\left[\left\{\left(\frac{4\pi}{4-\pi}\right)\frac{1}{4}\right\}-3\right]\frac{1}{4}\right\}+1\right)\frac{1}{8}= \quad which \quad \pi-3 \ ?$$

Let us work out with traditional π and Cosmic π.

1. With traditional π = 3.14159265358…

$$\left(\left\{\left[\left\{\left(\frac{4\times 3.14159265358}{4-3.14159265358}\right)\frac{1}{4}\right\}-3\right]\frac{1}{4}\right\}+1\right)\frac{1}{8}=0.14561851144$$

The end result agrees with two decimals of traditional

π = 3.14159265358 – 3 = 0.14159265358

2. With Cosmic π = 3.14644660941…

$$\left(\left\{\left[\left\{\left(\frac{4\times 3.14644660941}{4-3.14644660941}\right)\frac{1}{4}\right\}-3\right]\frac{1}{4}\right\}+1\right)\frac{1}{8}=0.1464466094$$

So, the above arithmetic approach confirms the reality of Cosmic π

3.14644660941 – 3 = 0.14644660941.

Conclusion

The real π alone can be an exact π. Cosmic π equal to $\frac{14-\sqrt{2}}{4}$ is thus true and exact. Secondly, the Cosmic π of the inscribed circle in a square also finds the exact diagonal length and gets the credit of an alternative method to the monarch: Pythagorean theorem.

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