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SYMMETRICAL DIVISION OF SQUARE AND CIRCLE (INTO 32) IS REFLECTED BY THE CORRECT DECIMAL PART OF THE CIRCUMFERENCE (0.14644660941…) OF CIRCLE HAVING UNIT DIAMETER

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ABSTRACT

Square and circle are different, in being, the former a straight line entity and the latter a curvilinear one. When a circle is inscribed in a square and the composite construction is divided symmetrically into 32 segments, it helps in finding the real Pi value.

KEYWORDS: Circle, diameter, diagonal, Pi, segment, side, square.

INTRODUCTION

Pi is a geometrical constant having its universal application from the celestial bodies such as stars, planets etc. in the infinite Space to a shining new coin in the hand. To know the length of the circumference, area of a circle and surface area, perimeter, and volume of the Earth (sphere) the value of π is a must. Unfortunately, π value has remained approximate till March 1998. From this day, even **without Pi,** the area and the circumference of circle can be calculated with the help of **radius alone,** just like, side in the square and altitude and base in the triangle.

$$\text{Area} = \pi r^2 \quad \text{or} \quad r\left(\frac{7r}{2} - \frac{\sqrt{2}r}{4}\right)$$

$$\text{Circumference} = 2\pi r \quad \text{or} \quad 6r + \frac{2r - \sqrt{2}r}{2}$$

Thank God, the real π value was revealed and is $\frac{14-\sqrt{2}}{4}$ = 3.14644660941…. Surprisingly, the mathematics community is not convinced of this discovery. Unmindful of this negligence by the mathematical world, the new value has been growing day by day and getting stronger with more evidences geometrically **challenging** of its reality. More than ten thousand Professors all over the world have been informed humbly and repeatedly of this discovery from March 1998 and continuing even today with every latest method that comes. Like that, nearly **more than hundred geometrical methods** have been submitted in the last 17 years. Not even one in thousand people, show interest in this *"extraordinary discovery*". There are a dozen Professors who wrote books on Pi value. They too, never responded. When papers were sent to the journals of Western countries for publication, the reply mostly has been, the new value is **revolutionary in its nature** and their journal would accept papers which support the **traditional π value** (i.e. 3.14159265358) **only**. This is the present situation prevailing in the Pi world. This author has been doing work on this new value single handedly without any research guide too, and with minimum knowledge in the basic geometry and now he is a retired Zoology Lecturer aged 70 years. Here is yet another attempt in support of the real π value. An interesting feature about the value of π is that everyone believes the concept of "limit" in arriving at the π value. Secondly, though 3.14159265358… actually represents polygon, it is argued strongly that there is no wrong in the limit concept, because, at infinity this lead to circle and polygon's value can be taken without any iota of doubt, as π of the circle. **Coming to the nature** of π value, **C.L.F. Lindemann's** proof of 1882 has been quoted universally as the correct one. According to Lindemann, π constant 3.14 is a transcendental number. He came to this conclusion based on the **Euler's equation** $e^{i\pi}+1=0$. If we look at the Euler's equation, we find e, i, π, 1 and zero are the constituents. e is not an exact number, i means $\sqrt{-1}$, and π is 180^0. They are unrelated, and yet it is said, there lies

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beauty of the equation. Coming to π, it is π radians 180^0. It is not π constant 3.14. If π constant 3.14 is involved, the Euler's equation looks like this

$$e^{i\times 180}+1=0$$

$$e^{i\times 3.14}+1=?$$

Are we to accept that

π radians 180^0 = π constant 3.14 ?

Then alone, π can be called a transcendental number and Linddemann's proof would be right. If π radians and π constant are **not** same or equal or identical, is it right to call π number as transcendental number, based on Euler's equation, where, this Euler's equation **rejects** outright the π constant in its fold ?

There is one more opinion prevailing in the mathematics world, and is, the **impossibility of "Squaring a circle".** This view has gained momentum from 1660 onwards and was expressed by **James Gregory** of Scotland first (perhaps). He is famous for his arc-tan infinite series in the computation of 3.14159265358… called as π value. Inspite of his opinion, mathematicians have been trying squaring a circle with the known π value as equal to 3.14159265358… **S. Ramanujan** has succeeded to a large extent. Lindemann's proof of 1882 calling 3.14159265358… as a transcendental number has **buried the idea of squaring a circle,** permanently. However, Ramanujan (1914) could do it.

Thus **to sum up**, we have, 3.14159265358… of polygon as π of the circle, 2. This number is a transcendental number and 3. Squaring a circle is an impossible concept.

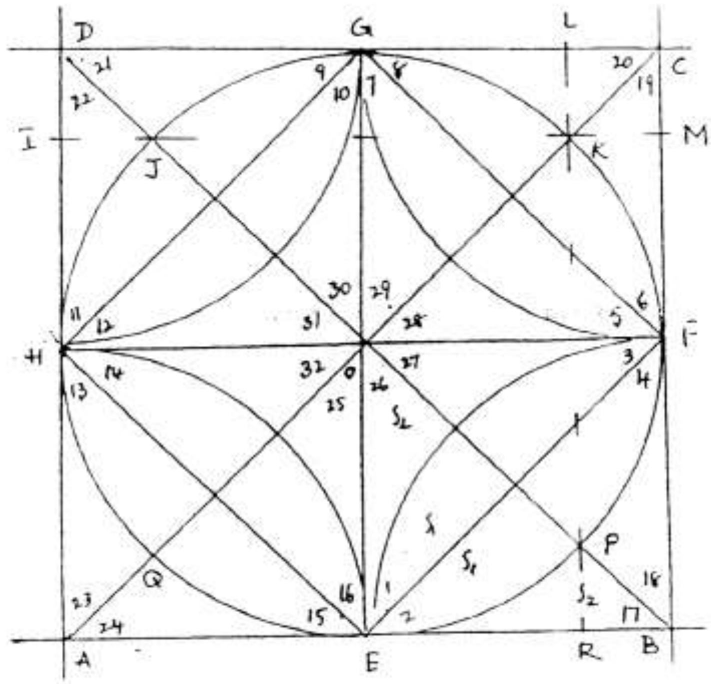
If one studies deeply, one point appears clear and that is, 3.14159265358… is not π of the circle, to be frank. Then, what is the number that can be called π of the circle ? **No answer**, then. From 1882 (of Lindemann) to March 1998 (discovery of true π value) the above views on π was **unchallengeable facts.**

The course of π has **changed** for the better **from March 1998** onwards. How ? the real π value became known to the world for the first time. This worker, because, of his luck and opportunity of seeing this real π value $\frac{14-\sqrt{2}}{4}$ could question the number 3.14159265358, calling as π of the circle, the transcendental nature of the π and the impossibility of squaring a circle, then on.

This author has been trying **to convince** the world of mathematics, that the real π value of circle, is, $3.14644660941... = \frac{14-\sqrt{2}}{4}$, π number is an **algebraic** number, and squaring a circle, circling a square and squaring an arbelos of Archimedes are **all very easy** geometrical processes.

METHOD

Construction procedure: Draw a circle with center '0' and radius *a*/2. Diameter is 'a'. Draw 4 equidistant tangents on the circle. They intersect at A, B, C and D resulting in ABCD square. The side of the square is also equal to diameter 'a'. Draw two diagonals. E, F, G and H are the mid points of four sides. Join EG, FH, EF, FG, GH and HE. Draw four arcs with radius *a*/2 and with centres A, B, C and D. Now the circle square composite system is divided into 32 segments and number them 1 to 32. 1 to 16 are of one dimension called S_1 segments and 17 to 32 are of different dimension called S_2 segments.



The number 32 is a significant number that divides square and circle symmetrically, without the loss of **identity or totality** of the both. When the side / diameter of square with its inscribed circle is one, the length of the circumference is equal to π.
Square: Side = a
Area = a^2, perimeter = 4a
Circle : Diameter = side = a = d
Area = $\frac{\pi d^2}{4} = \frac{\pi a^2}{4}$
Circumference = $\pi d = \pi a$
When the diameter is equal to one, the length of the circumference of circle is
$\pi d = \pi \times 1 = \pi$

There are many values to π. But two values are selected here. The official π value is 3.14159265358… The real π value was revealed by the Nature in March 1998, which is equal to $\frac{14-\sqrt{2}}{4}$ = 3.1464466… The new π value differs from the official π value from the **third** decimal. The official π value says third decimal is 1 and the new π value argues not 1 but 6. Secondly, the official π value remains always **approximate**, inspite of its astronomical dimension by its trillions of decimals. Whereas, the new π value is **exact,** being $\frac{14-\sqrt{2}}{4}$. Thirdly, the official π value is **transcendental** in nature and very very strongly argues that squaring of circle is **impossible**. Whereas, the new π value coolly says π is an **algebraic** number and happily announces that squaring of circle is, **as easy as, 2 x 2 = 4** .

In the official π value 3.14159265358… or in the new π value 3.14644660941… the **dispute** pertains to, in the **decimal part** i.e. 0.14159265358… of official π or 0.14644660941… of the new π. **Which is correct ? Archimedes** (240 BC) of Syracuse has said, instead of, in the decimal system (then it was not in vogue due to unknowing of zero in the number system in the western countries of the world) he has said in fraction *'less than 1/7'*. So,

$$\pi = 3 + \frac{1}{7} = \frac{22}{7}$$

Arithmetical process to choose the real π value

1. Area of the inscribed circle = $\frac{\pi d^2}{4}$
2. Area of the circumscribed square = d^2 = (=a^2)
   where, side = diameter = a = d
3. Square area – circle area = Area in between the square and circle or difference
   = $d^2 - \frac{\pi d^2}{4} = \frac{4d^2 - \pi d^2}{4}$
4. When the side of the square = 1
   Perimeter of the square = 4
   Diameter of the circle = d = 1
   Circumference of the circle = πd = π x 1 = π
5. $\frac{4d^2 - \pi d^2}{4}$ becomes $\frac{4-\pi}{4}$ when d = 1
6. We know, when the difference between the square and circle is equal to $\frac{4-\pi}{4}$, the side of the square is equal to 1.
7. **Let us find out** what would be the side of the square (and diameter of its inscribed circle) if the difference is 1 instead of $\frac{4-\pi}{4}$.
   $\frac{4-\pi}{4}$ when side is 1
   Suppose, when the difference is 1 what would be the side ?
   $\frac{1}{\frac{4-\pi}{4}} \times 1 = \frac{4}{4-\pi}$
   So, when the difference between the square and circle is 1, the side of the square would be $\frac{4}{4-\pi}$ = say x
8. The decimal part of the π value is represented as 0.14159265358… for the official π value, and 0.14644660941… is represented for the new value, and for both it can be written as
   π – 3 = y
   So, π – 3 = 3.14159265358 – 3 = 0.14159265358 (official)
   = 3.14644660941 – 3 = 0.14644660941 (new)
9. Divide x with y, which **reflects** the number 32 by which the square and its inscribed circle exist symmetrically (Figure)
   $= \frac{x}{y} = 32 = \frac{\frac{4}{4-\pi}}{\pi - 3} = \frac{4}{(4-\pi)(\pi-3)}$
10. **<u>Identification of the correct π value</u>**
   Using the above formula, which is in terms of π, one can choose the real π value out of a few numbers in the literature, because **every worker claims including the mathematical establishment** his/ its value is right.
   So, the formula is = $\frac{4}{(4-\pi)(\pi-3)}$ = 32

S. No.	π value	Formula	Square – circle division number = 32
1.	Official value 3.14159265358	$\frac{4}{(4-3.14159265358)(3.14159265358-3)}$ $= \frac{4}{0.85840734642 \times 0.14159265358}$	$= \frac{4}{0.12154417403} = 32.9$
2.	Gogawale Lakshman's Value $17-8\sqrt{3} =$ 3.1435935396	$= \frac{4}{0.8564064604 \times 0.1435935396}$	$= \frac{4}{0.12297443498}$ =32.5
3.	Pi value from the Golden ratio of Jain of Australia and Mark Wollum 3.144605511	$= \frac{4}{0.855394489 \times 0.144605511}$	$= \frac{4}{0.12369475718}$ = 32.3
4.	1998 Pi value $\frac{14-\sqrt{2}}{4} =$ 3.14644660941	$= \frac{4}{0.85355339059 \times 0.14644660941}$	$= \frac{4}{0.125}$ = 32

From the above calculations, $\frac{14-\sqrt{2}}{4}$ = 3.14644660941… is proved the real π value by this arithmetic process.

CONCLUSION

The official π value 3.14159265358… is not the real π value. The true π value is $\frac{14-\sqrt{2}}{4}$ = 3.14644660941… though the official π value 3.14159265358… is also obtained with the help of many polygons inscribed, doubling at every step; but the value of the inscribed polygon is **attributed** to the circle. **It is a mistake,** to be frank. Whereas, the 1998 π value, too takes the help of 4-gon polygon called square, but a **different approach** is adopted which no body adopted in the last 2400 years. **Eudoxus's of Cnidus** (408 BC – 355 BC), Greece, method is still the method we are believing in the name of "limit" and forgot to think of a better method, than this.

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