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An Unknown Pi of Circle in Between Two Known Squares in Deriving the True Value of Pi (1412th Proof)

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Abstract

All over the world for the last 4000 years, we have been struggling to find the correct and exact value of Pi. Two values 22/7 and 3. 14159265358....have been used. Both are approximations. We consider Pi constant 3. 14159265358....is a transcendental number. The age-old fundamental concept of Squaring a Circle remained unsolved till today. This author has been studying since1972 and discovered this method which shows the true Pi value and is 1/4(14 - $\sqrt{2}$) which is the exact value of Pi and further is an algebraic number. The unsolved problem called Squaring a Circle has also been solved now.

Keywords: Syracuse; Circle; Circumference

Introduction

3.14159265358... has been used as a π value for the last 2000 years. This number represents the polygon of the Exhaustion Method of Archimedes (240 BC) of Syracuse, Greece. This is the only geometrical method available even now. The concept of limitation principle is applied and thus this number is attributed to the circle. In other words, 3.14159265358…. of the polygon is a borrowed number and attributed/ thrust on the circle as its π value, as the other ways, to find the length of the circumference of the Circle, has become impossible with the known concepts, principles, statements, theorems, etc.

From 1660 onwards, 3.14159265358... has been derived by infinite series also, starting with John Wallis of UK and James Gregory of Scotland. This number was obtained by Madavan of Kerala, India, adopting the same concept of infinite series even earlier i.e. 1450. The World of Mathematics has recognized very recently, that Madavan is the first to invent infinite series for the derivation of 3.14159265358. John Wallis and James Gregory too invented the infinite series independently though later in the period (George Gheverghese Joseph of Manchester University, UK).

C.L.F. Lindemann (1882), Von K. Weirstrass and David Hilbert have called 3.14159265358… as a transcendental number. The basis for their proof was Euler's formula $e^{i\pi}+1=0$ (Leonhard Euler, Swiss Mathematician, 1707-1783).

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With their proofs, squaring of the circle has become, without any doubt, an unsolved geometrical problem. Thus, the present thinking on π is, 3.14159265358… is the π value which is an approximation, and squaring of the circle is impossible with the number (**FIGS. 1-3**).

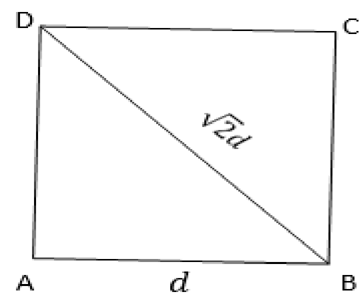

FIG.1. **Square: ABCD, Side=d, Diagonal=** $\sqrt{2}d$ **, Perimeter=4d**

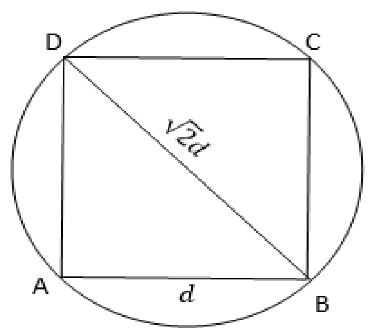

FIG.2. **Showing the Circumscribe a Circle, Diameter =** $\sqrt{2}d$ **, Circumference =** $\pi\sqrt{2}d$ **, Circumference–3 Diameters =**

$$\left(\pi\sqrt{2}d-3\sqrt{2}d\right)=(\pi-3)\sqrt{2}d$$

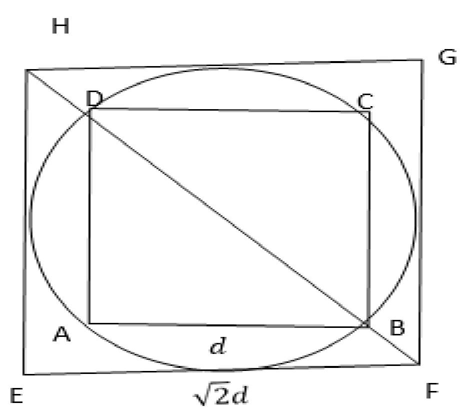

FIG.3. **Outer Square EFGH, Side= EF=** $\sqrt{2}d$ **=AC=BD, Perimeter=** $4\sqrt{2}d$

We know the perimeters of ABCD inner square (= 4d) and EFGH outer square (= $4\sqrt{2}d$). The circumference of the circle is $\pi\sqrt{2}d$. Where, we don't know the value of π. My study from sometime in 1972 to today (18 May 2022) made me see the hidden truth in understanding the interrelationship among inner, and outer squares and circles.

The perimeter of the outer square - is 8 times of $(\pi - 3)\sqrt{2}d$ = Perimeter of the inner square.

$$4\sqrt{2}d - 8(\pi - 3)\sqrt{2}d = 4d$$

$$2(\pi - 3)\sqrt{2} = \sqrt{2} - 1$$

$$\pi = \frac{\sqrt{2} - 1}{2\sqrt{2}} + 3$$

$$\pi = \frac{2 - \sqrt{2}}{4} + 3$$

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

Note