

# Pyramids of Squaring Pi

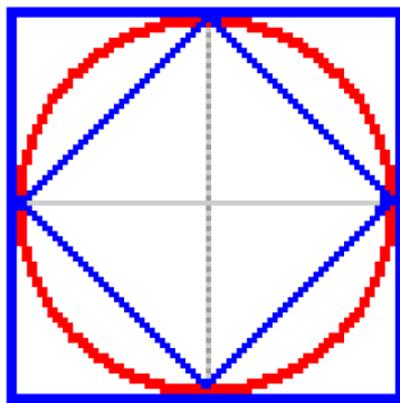
Fernando Mancebo Rodríguez Malaga\*

Researcher and writer on Cosmology Spain

## The powers of Pi

The Squaring Pi (proposed here as the right Pi number) consists of two parallel functions (exponentials) of the inscribed and circumscribed squares to the circumference (Figure 1). The pyramids of squaring Pi are numeric tables developed in pyramid or triangle form, which show us as successive powers of Pi go approaching to successive decimal powers of the inscribed and circumscribed squares to the circumference, to end up coinciding at certain level. With the values of these levels of coincidence we can obtain the squaring Pi by means of root of these values.

Below is showed two pyramids that relate the squaring Pi with the perimeters of the inscribed and circumscribed squares to the circumference. Firstly the relative to the inscribed square, where we observe that the Pi powers go approaching to the decimal product of the inscribed semi-square to the circumference, till get to  $(\pi^{17})$  and  $(2 \times \sqrt{2} \times 10^8)$  where is produced the coincidence of values. Being this way in this level-point  $\pi^{17} = 2 \times \sqrt{2} \times 10^8$  (Figure 2).



Squaring Pi = 3,141591444141992652182488412553.....

Figure 1: Total interrelation: Geometric and mathematical.

Inscribed square to the circumference.

## Pyramid of Squaring $\pi$ On the inscribed square ferman

$\pi^{17} = 2\sqrt{2} \times 10^8$        $\pi = 3,141591444141992652182488412553$

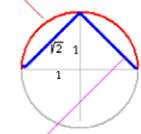
$\pi^1$	=	3,1415914441419926521824884	
$\pi^3$	=	31,006240869999599736863023	
$\pi^5$	=	306,019095729680460820730105	
$\pi^7$	=	3020,28508853587264802485046	
$\pi^9$	=	29608,99605065854503370897695	
$\pi^{11}$	=	294202,7720896132559330363048	
$\pi^{13}$	=	2903662,738527577078158485870	
$\pi^{15}$	=	28657980,47798588969543931320	
$\pi^{17}$	=	282842712,47461900976033774484	
	=	$2\sqrt{2} \times 10^8$	

Figure 2: Inscribed square of the Circumference.

## Circumscribed Square to the Circumference

In this second pyramid, it is shown the power  $\pi^{34}$  in relation with the perimeter of the circumscribed square to the circumference (8) by the decimal powers  $10^{16}$ . As we see in Figure 3, the odd powers of squaring Pi drive us to the inscribed square to the circumference, and the even powers drive us to the circumscribed square. Here we observe as the Pi powers are approximately the double that the decimal powers ( $\times 10^n$ ) applied to the perimeters of the squares, and it is due to get any decimal value applied to the sides perimeter is necessary the square of the number Pi ( $\pi^2 = 9.8696\dots$ ). We also observe that the powers of Pi in relation with the squares perimeters are the order of  $2n+1$  and  $2n+2$  due to for starting the pyramids of powers we need of  $+1$  or  $+2$  the powers of Pi to get the first term in the powers of the squares' perimeters.

## Reasoning the Number N of Powers

The number of decimal powers  $n$  ( $10^n$ ) that multiply the sides of the inscribed and circumscribe squares to the circumference is the number of powers applied to the triangles legs that form these sides when they are obtained by the Pythagoras theorem. It seems to be that the coincidence numbers in powers ( $n=8$  and  $n=16$ ) for the perimeters of the inscribed and circumscribe square to the circumference are produced to this level due to these  $n$ -numbers are the numbers of times

## Pyramid of Squaring $\pi$ 3,141591444141992652182488412553 ferman

Circumscribed square to the circumference

$\pi^{34} = 8 \times 10^{16}$

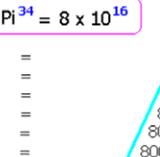
$8 \times 10^0$	=	8	$9,8695968019061709 = \pi^2$	
$8 \times 10^1$	=	80	$97,408941032196517 = \pi^4$	
$8 \times 10^2$	=	800	$961,38697288843353 = \pi^6$	
$8 \times 10^3$	=	8000	$9488,5017930139382 = \pi^8$	
$8 \times 10^4$	=	80000	$93647,686951211334 = \pi^{10}$	
$8 \times 10^5$	=	800000	$924264,91163958563 = \pi^{12}$	
$8 \times 10^6$	=	8000000	$9122122,0160321440 = \pi^{14}$	
$8 \times 10^7$	=	80000000	$90031666,276028721 = \pi^{16}$	
$8 \times 10^8$	=	800000000	$888576245,54817673 = \pi^{18}$	
$8 \times 10^9$	=	8000000000	$8769889271,3120775 = \pi^{20}$	
$8 \times 10^{10}$	=	80000000000	$86555271105,212920 = \pi^{22}$	
$8 \times 10^{11}$	=	800000000000	$854265626888,13104 = \pi^{24}$	
$8 \times 10^{12}$	=	8000000000000	$8431257299113,4684 = \pi^{26}$	
$8 \times 10^{13}$	=	80000000000000	$83213110075378,348 = \pi^{28}$	
$8 \times 10^{14}$	=	800000000000000	$821279845076620,32 = \pi^{30}$	
$8 \times 10^{15}$	=	8000000000000000	$8105700932438207,4 = \pi^{32}$	
$8 \times 10^{16}$	=	80000000000000000	$80000000000000000 = \pi^{34}$	

Figure 3: Circumscribed Square to the Circumference.

\*Corresponding author: Fernando Mancebo Rodríguez Malaga, Researcher and writer on Cosmology Spain, Spain, Tel: 34-951384785; E-mail: ferman30@yahoo.es

Received January 30, 2014; Accepted February 24, 2014; Published February 27, 2014

Citation: Malaga FMR (2014) Pyramids of Squaring Pi. J Appl Computat Math 3: 156. doi:10.4172/2168-9679.1000156

Copyright: © 2014 Malaga FMR. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

that we must to multiply the sides (legs) of the triangles to build the perimeters of the squares, as for the Pythagoras theorem. Say, to form a side of the inscribed square (hypotenuse) it is necessary to elevate any leg to the square, what gives us as result 4 powers of legs for any square-side and 8 powers to the both square-side inscribed to the semi-circumference (Pi) (Figure 4). For the pyramid of the circumscribed square the result will be double because of here it is not a semi-square, but a complete square (Figure 5).

**Vision of Alignment on the Units' Column**

Other vision or geometric perspective is the alignment of the powers of Pi on the column of units. This is gotten dividing the powers of Pi (Pi<sup>2n+2</sup>) by 10<sup>n</sup>, and with this we go observing clearer as these Pi powers go drive us to 8, the value of the perimeter of the circumscribed square to the circumference. Getting this value (8) for n=16. (Remember, the number of powers that we must subject to the legs of the triangles component of the circumscribe square to the circumference) (Figure 6).

**Antecedents: The Birthday of an Idea**

The first idea for searching the Squaring Pi was born from the observation of the curve functions in the Cartesian coordinates. If we look at the function y=x<sup>2</sup>, this function gives us a curve, which in values between 0 and 1 is similar to a quarter of circumference.

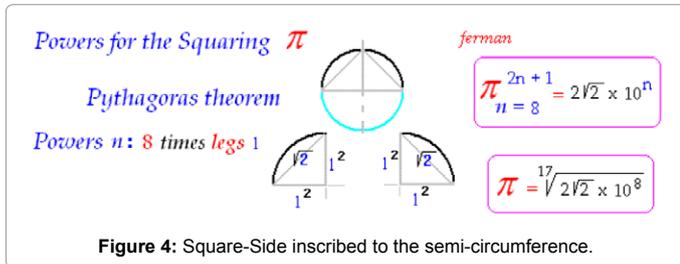


Figure 4: Square-Side inscribed to the semi-circumference.

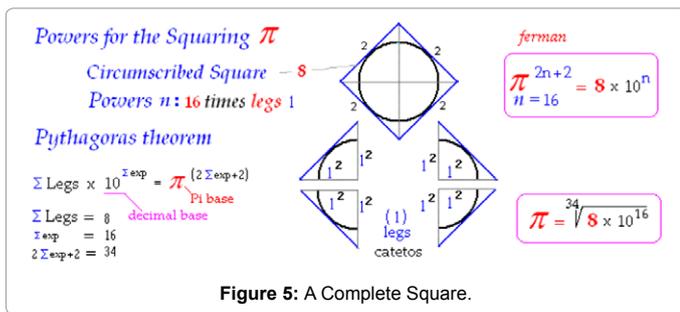


Figure 5: A Complete Square.

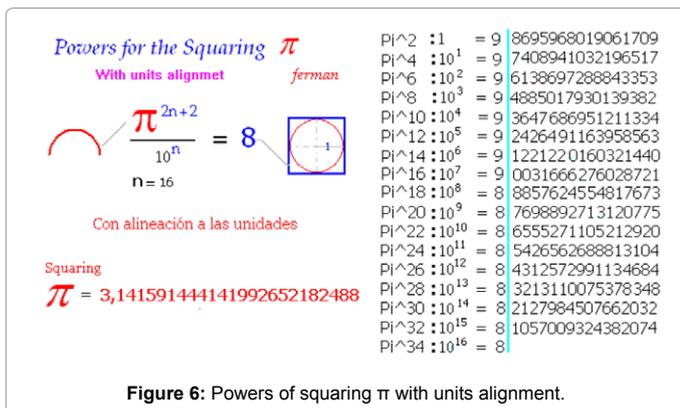


Figure 6: Powers of squaring π with units alignment.

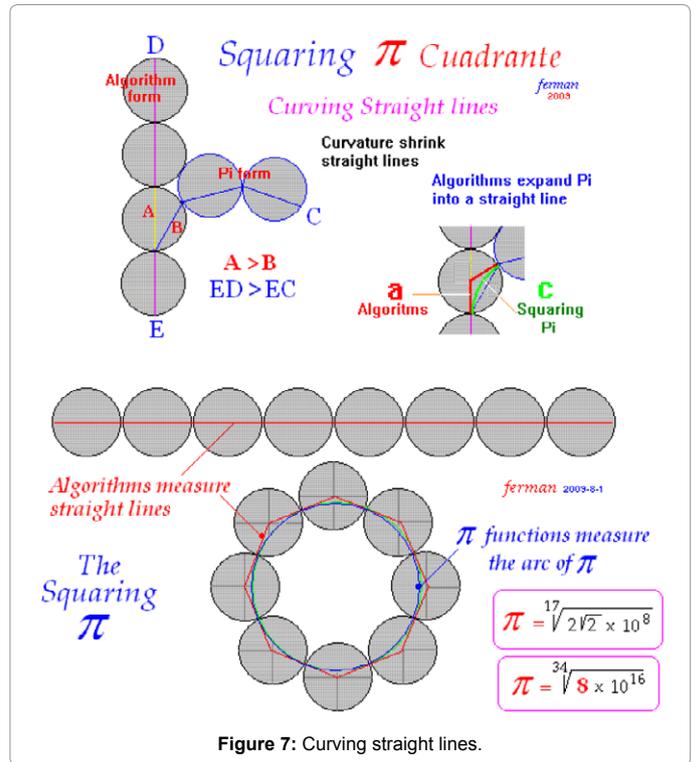


Figure 7: Curving straight lines.

So, if the perimeters of the inscribed and circumscribed squares to the circumference are straight lines, and the inscribed circumference is a curve, (having both the same basic parameters of construction: circumference diameter and squares sides), then it should be possible (and mathematically required) that adequate powers and roots of these perimeters give us any function that unites both parameters. Later on, alone I must to practice and operate extensively till find the "Circle's squaring": The Squaring Pi.

**Observation on the Current Pi Number**

With the current algorithm method for obtaining Pi what we make is the addition of the semi-circumference points to build with them a straight line\*, but Pi is an arc of circumference and not a straight line. \*Because here we are uniting and adding in a continue way the n-gon sides of the polygon in that we divide the circumference. In this case, we forget a property or geometric principle that could say us: "Any straight line that goes being curved endless, also goes losing dimension or longitude till disappear in a central point when this is curved indefinitely (endless) in symmetric or circumferential shape." And this is due to when we curve a straight line, the points that form the same go closing progressively among them by the interior side of the curve, till join together in a central point if the curvature is symmetric and endless. Inversely, in the case of the algorithmic Pi, to the component points of the circumference we go adding them in straight line, and with that, we go extending them till form a straight line with more longitude (although in minimum value) than Pi in curved line (Figure 7). And to finish, let me put the mathematical maxim of Squaring Pi.

**Mathematical Maxim of Squaring Pi**

"If the circumference is built, contained, limited and changed depending on the value of its inscribed squares (inner and outer), and vice versa. Then, a direct function of the perimeters of these squares that gives us the exact value of Pi ought to exist, and vice versa. A direct

function of Pi that gives us the value of the perimeters of the inscribed (inner and outer) squares to the circumference also ought to exist (Figure 8)."

**Proofs and Properties**

Summarizing a lot, we can note the following properties and proofs of the quality of the Squaring Pi.

- Logically, the most important one could be the consideration of the Squaring Pi as de true value of Pi; although this question doesn't correspond to me its solution, but to the future mathematical development.

- The second characteristic is the easy way to obtain the squaring Pi by mean of two very simple functions of the inscribed and circumscribed squares to the circumference, say:

$$Pi=Raiz-34 \text{ de } 8 \times 10^{16} \text{ ----- } [8 \times 10^{16}]^{(1/34)}$$

$$Pi=Raiz-17 \text{ de } 2\text{-raiz de } 2 \times 10^8 \text{ ----- } [2 \times 2^{(1/2)} \times 10^8]^{(1/17)}$$

$$\pi = \sqrt[17]{2\sqrt{2} \times 10^8}$$

$$\pi = \sqrt[34]{8 \times 10^{16}}$$

- The third characteristic is the a lot of interrelations of all possible inscribed and circumscribed circumferences and squares among them that we can encounter expressed in different levels of the numeric tables of the Pyramids of Squaring Pi exposed in this work (Figure 9).

For example

Inscribed square to the circumference=Circumference  $\beta \times (Pi^{16}/10^8)$

Circumscribed square to the circumference=(Circumference  $\times Pi^{33})/2 \times 10^{16}$

**Algebraic formula for Squaring  $\pi$  [ 2 function ]**  
*ferman* **Fórmula algebraica para  $\pi$  Cuadrante**

$$\text{Squaring } \pi = \sqrt[2^5 + 2]{2^3 \times (2 + 2)^{(2^4)}}$$

**Figure 8:** Algebraic formula for squaring  $\pi$   
 Curiosity: The Squaring Pi in function of 2.

**Proofs and Properties of the Squaring  $\pi$**  3,141591444141992652182488412553.....  
*ferman 2008-8-1*

**Inscribing circles and squares**

Ins-coeff. =  $\frac{\pi^{16}}{10^8} = 0,90031666276028721 \dots$

<b>Circumference A</b>	<b>Ins-coeff.</b>	<b>Perimeters</b>
6,2831828882839853 ...	$\times 0,90031666276028721 \dots$	<b>Inscribed square A</b>
		5,65685424
<b>Circumference B</b>	<b>Ins-coeff.</b>	<b>Inscribed square B</b>
$\frac{\pi^{18}}{10^8} \rightarrow 8,8857624554817673 \dots$	$\times 0,90031666276028721 \dots$	8

$$\frac{2 \text{ Perimeter B} \times 10^{16}}{\pi^{33}} = \frac{16 \times 10^{16}}{25464800698121644} = 6,2831828882839853$$

**Inscribed Circumference A**

$$\frac{\text{Circumference A} \times \pi^{33}}{2 \times 10^{16}} = \frac{6,2831828882839853 \times 25464800698121644}{2 \times 10^{16}} = 8$$

**Figure 9:** Proof & Properties of the squaring  $\pi$ .

**The circle's squaring by the Squaring  $\pi$**  *La Cuadratura del Circulo*  
*ferman*

$2\pi = 6,283182888$

$\frac{1 \times 10^8}{\pi^{16}} = 1.11072 \dots$

$a^2 + b^2 = c^2$       $a, b = 1.11072 \dots$       $c = 1.570795 \dots$

$4 \times 1.570795 \dots = 6.283182888 \dots$

$4 \times 1.570795 \dots = 6.283182888 \dots$

$\frac{2 \times 10^8}{\pi^{15}} = 6.978858 \dots$

**Figure 10:** The circle squaring by the squaring  $\pi$ .

**Squarings of  $\pi$**  3,141591444141992652182488412553.....  
*ferman*

**Circle's squaring  $2\pi$**

$\frac{\pi^{18}}{10^8}$       $\frac{\pi^{34}}{10^{16}}$       $\frac{2\pi^{17}}{10^8}$       $\pi^2$

$\frac{10^8}{\pi^{16}}$       $1,11072$       $1$

$\frac{\pi^{18}}{2 \times 10^8}$       $\frac{2 \times 10^8}{\pi^{15}}$

**Figure 11:** Squaring of  $\pi$ .

Inscribed circumference to a square =  $[2Pc \times 10^{16}] / Pi^{33}$

Circumscribe circumference to a square =  $(Pc \times 10^8) / Pi^{16}$  Etc. Where Pc is the perimeter of the square; and Pi is the Squaring Pi (Figures 10 and 11) [1-8].

**Author's Considerations**

Taking in mind the anterior properties, coincidences and squaring of the powers of Squaring Pi in the building and structuring of the n-squares and n-circumferences inscribed and circumscribed among them in exponential way, properties that doesn't have the current Pi, I think the Squaring Pi has many possibilities of being the correct value of the geometric Pi.

**References**

- Srinivasa R (1914) Modular Equations and Approximations to  $\pi$ . Quarterly Journal of Pure and Applied Mathematics 45: 350-372.
- Niven I (1947) A Simple Proof that pi Is Irrational. Bull Amer Math Soc 53: 509-636.
- Schepler HC (1950) The Chronology of Pi. Math Mag 23: 165-170.

4. Shanks D, Wrench JW (1962) Calculation of pi to 100,000 Decimals. Math Comput 16: 76-99.
5. Wagon S (1985) Is Pi Normal? The Math Intell 7: 65-67.
6. Borwein JM, Borwein PB, Bailey DH (1989) Modular Equations, and Approximations to Pi or How to Compute One Billion Digits of Pi. The Am Math Mon 96: 201-219.
7. Delahaye J-P (1997) Le Fascinant Nombre Pi. Bibliothèque Pour la Science, Paris, France.
8. Eymard P, Lafon JP (1999) The Number Pi. American Mathematical Society.