

The Pi Square equation

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ABSTRACT: In this article, we are giving the accurate value of $(\pi)^2$ after four decimal places by considering the relation between two positive integers.

KEYWORDS: Positive unique integers, Value of π & G.C.D.

I. INTRODUCTION

In mathematics, we have two equations which give approximate value of π with the help of two integer values. These relations are given by Aryabhata 1st and Aryabhata 2nd. In this article I will state the value of π^2 by giving the relation between two integers.

II. EQUATION

Let x and y be two positive integers. Therefore, the values of x and y are unique & it is given by the following relation:

$$\boxed{x = \pi^2 y.}$$

where $\pi=3.141655614$ which is accurate value but we consider only first four decimal places that is $\pi=3.1416$.

Let x and y be unique integers for the relation in

$$\boxed{x = \pi^2 y.} \quad \dots(a)$$

Assume that there are infinitely many values of x and y which satisfies the above equation and the G.C.D of (x,y)=1.

Now, consider G.C.D of (x,y)=1 & let C_1 and C_2 be two positive integers such that:
 (by property of G.C.D).....(b)

$$\boxed{C_1x + C_2y = 1}$$

Therefore, replacing the value of x in (b) form (a), we get,

$$\begin{aligned} & \Rightarrow C_1(\pi^2 y) + C_2y = 1. \\ & \Rightarrow y[C_1\pi^2 + C_2] = 1. \\ & \Rightarrow y / 1. \end{aligned}$$

The above result is possible if and only if $y = 1$ which gives contradiction to our assumption that x, y are two positive integers that is $x > 1$ and $y > 1$.

III.

Hence, $x = \pi^2 y$ has unique values of x & y for $\pi = 3.141655611$. Where value of x and y are 987 and 100 respectively.

CONCLUSION

REFERENCES

Most of this article contributes my own personal work. The reference which I used in this article are as follows:

[1] Equation by Aryabhata 1 is:

$$\boxed{x = \pi y}$$

[2] where, $x = 62,832$,
 $y = 20,000$,
and $\pi = 3.1416$.

[3] Equation by Aryabhata 2 is:

$$a = b \pi$$

$b = 7$ and $\pi = 3.142857$.