SQUARING A CIRCLE IN SIX STEPS (377th Proof on Rho)

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SQUARING A CIRCLE IN 6 STEPS
(377 th Proof on Rho)

Step. 1

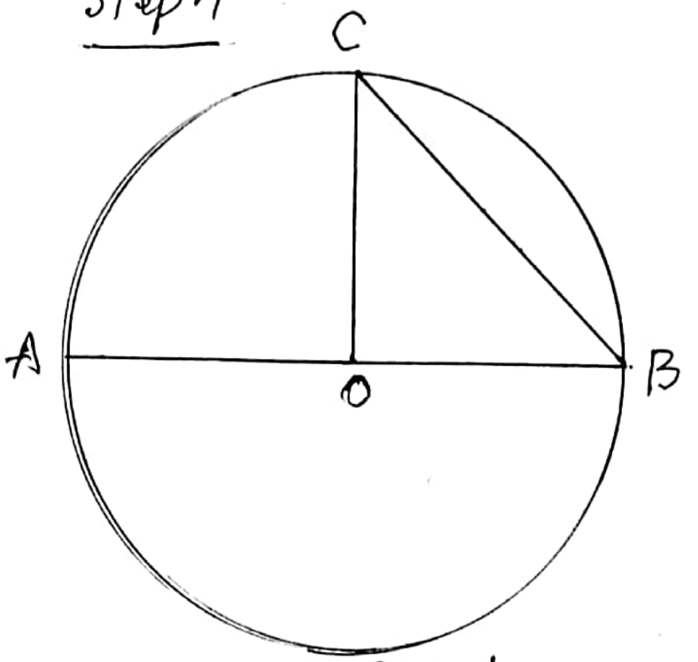

Fig. 1

Diameter = AB = 1

Radius = OC = OB = $\frac{1}{2}$

Chord / Hypotenuse = $\frac{\sqrt{2}}{2}$

Step. 2

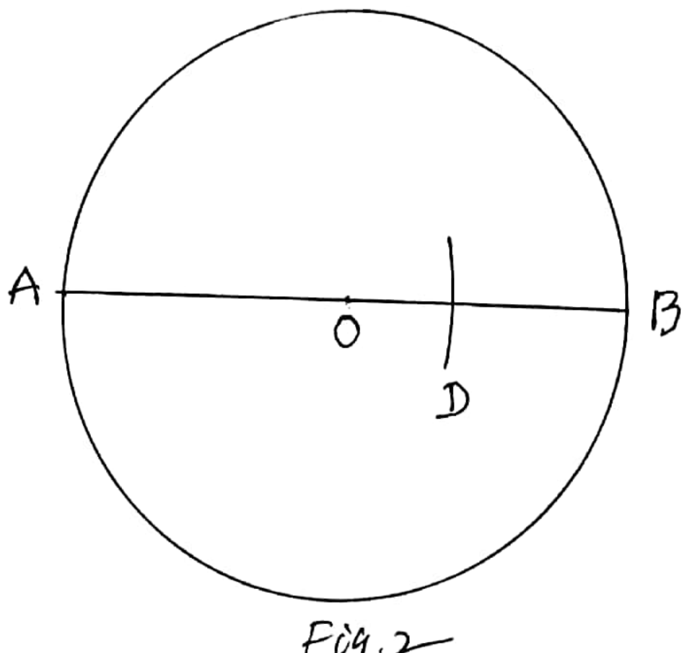

Fig. 2

AD = Chord / Hypotenuse

$= \frac{\sqrt{2}}{2}$

BD = AB − AD =

$= 1 - \frac{\sqrt{2}}{2} = \frac{2-\sqrt{2}}{2}$

So, $BD = \frac{2-\sqrt{2}}{2}$

Step. 3

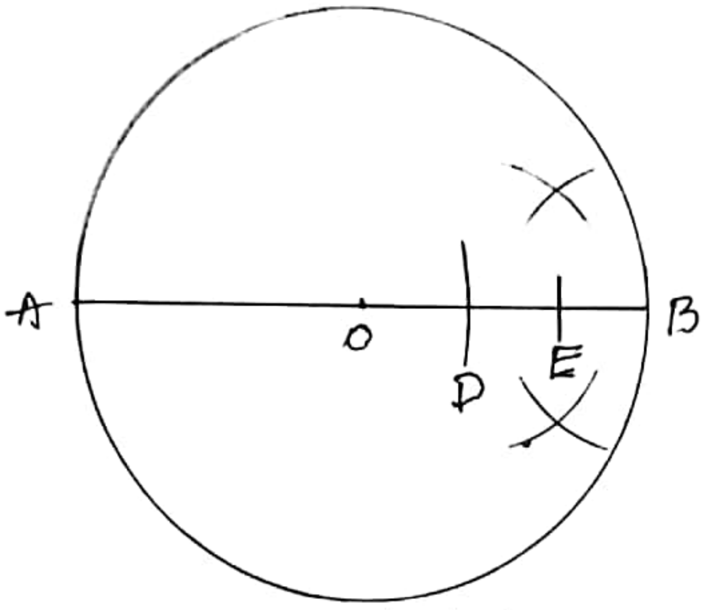

Fig. 3

Bisect BD

$$\frac{2-\sqrt{2}}{2} \rightarrow \frac{2-\sqrt{2}}{4}$$

$$DE = EB = \frac{2-\sqrt{2}}{4}$$

Then $AE = AB - EB$

$$= 1-\left(\frac{2-\sqrt{2}}{4}\right) = \frac{2+\sqrt{2}}{4}$$

Step. 4

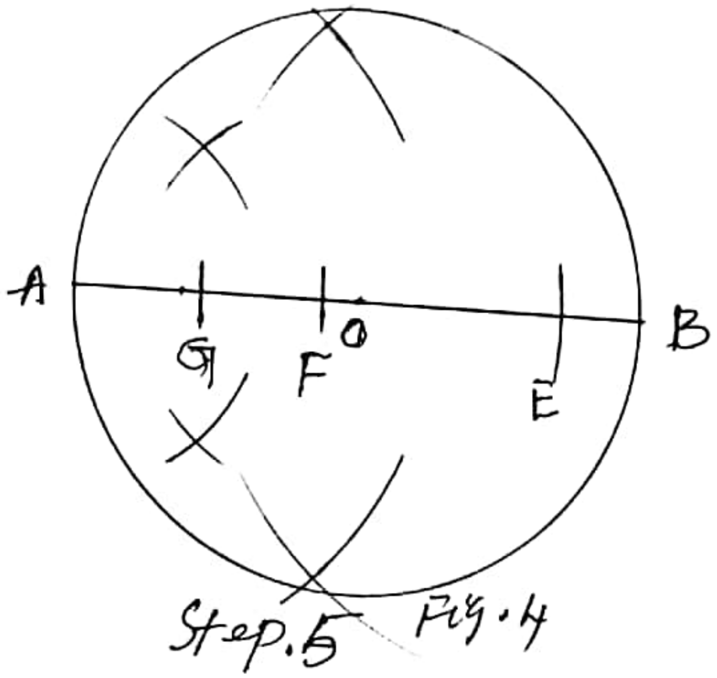

Fig. 4

$$AE = \frac{2+\sqrt{2}}{4}$$

Bisect AE twice

$$AF = FE = \frac{2+\sqrt{2}}{8}$$

$$AG = GF = \frac{2+\sqrt{2}}{16}$$

Step. 5

$$AG = \frac{2+\sqrt{2}}{16}$$

$$BG = AB - AG$$

$$1-\left(\frac{2+\sqrt{2}}{16}\right)$$

$$= \frac{14-\sqrt{2}}{16}$$

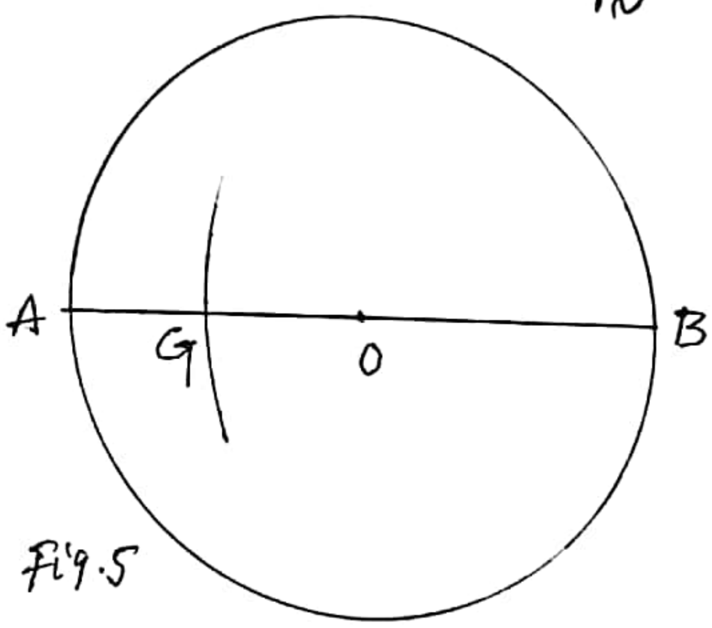

Fig. 5

Area of the Circle $= \frac{\pi d^2}{4} = \frac{\pi}{4} \times 1 \times 1 = \frac{\pi}{4}$

Squaring a Circle

$\frac{\pi}{4} \rightarrow \boxed{\frac{\pi}{4}}$

Circle Square

It means to construct a square whose area is equal to the area of Circle. For this we need a side equal to

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

Classical π equal to 3.1415926535 8 can not square a Circle. Why? There are 2 reasons:

1. 3.1415926535 8 represents polygon. It means this number does not represent circle. Really, this number is not π.
2. Based on the polygon-based-π-number, second wrong assumption was spread, saying, "Squaring a Circle is impossible.

Who and what is responsible?

1. The invention of Infinite series and
2. C.L.F. Lindemann of 1882.

The above 4 realities or facts have been known only after the discovery of exact and π of circle is known.

The value is $\frac{14-\sqrt{2}}{4}$.

The important requisite of squaring a circle is obtaining a line segment equal to $\sqrt{\pi}$.

When exact π called Rho is known $\frac{\pi}{4}$ is also obtained.

Exact π = Rho = ρ = $\frac{14-\sqrt{2}}{4}$

Then

$$\frac{\pi}{4} = \frac{\rho}{4} = \frac{14-\sqrt{2}}{4} \times \frac{1}{4} = \frac{14-\sqrt{2}}{16}.$$

BG length of Fig. 5 is equal to $\frac{14-\sqrt{2}}{16}$ and is equal to $\frac{\pi}{4}$.

The <u>next</u> step is very important. We have to obtain a length equal to $\frac{\sqrt{\pi}}{2}$. Here is the procedure.

Step. 6

So, $BG = \frac{\Pi}{4} = \frac{14-\sqrt{2}}{16}$

$AG = \frac{2+\sqrt{2}}{16}$

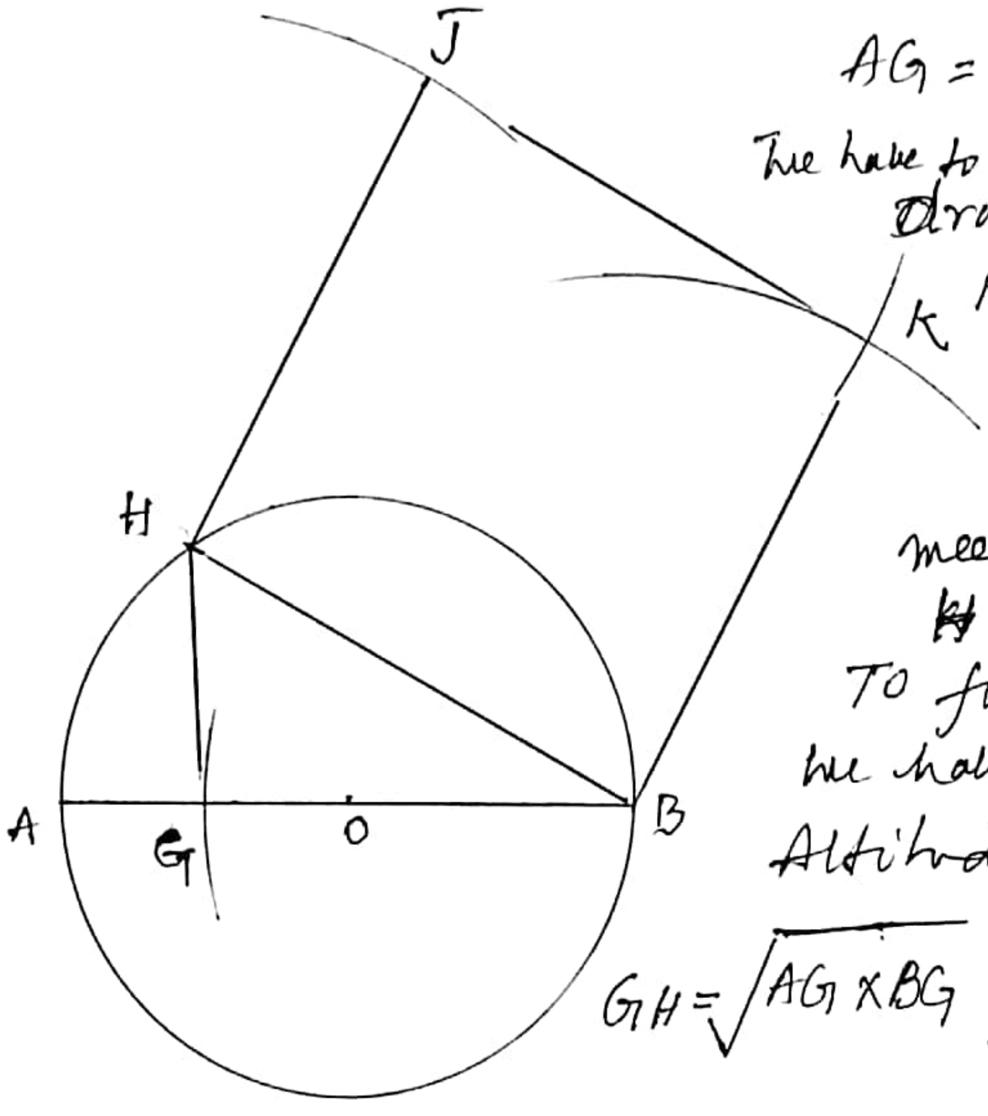

Fig. 6

The have to draw a perpendicular line on AB at G which meets circle at ~~H~~.

To find GH we have to apply Altitude theorem.

$$GH = \sqrt{AG \times BG} = \sqrt{\frac{2+\sqrt{2}}{16} \times \frac{16-\sqrt{2}}{16}}$$

$$GH = \frac{\sqrt{26+12\sqrt{2}}}{16}$$

What is BH then?
Let us apply Pythagorean theorem.

$$HB = \sqrt{(BG)^2 + (GH)^2}$$

$$= \sqrt{\left(\frac{14-\sqrt{2}}{16}\right)^2 + \left(\frac{\sqrt{26+12\sqrt{2}}}{16}\right)^2} =$$

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

So, BH is equal to $\frac{\sqrt{14-\sqrt{2}}}{4}$

It is the Required Side of the Square.

Let us build a Square BHJK

$$\text{Side} = \frac{\sqrt{14-\sqrt{2}}}{4}$$

$$\text{Area} = a^2 = \left\{\frac{\sqrt{14-\sqrt{2}}}{4}\right\}^2 = \frac{14-\sqrt{2}}{16}$$

Finally, Area of Circle of Fig. 1 ~~&~~ 6. = Area of Square $= \frac{14-\sqrt{2}}{16}$

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

By the grace of God Squaring a Circle is done which has remained unsolved since the days of Rhind Papyrus of 1650 BC.

Thank God

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