2531st PAPER "SQUARE A CIRCLE"

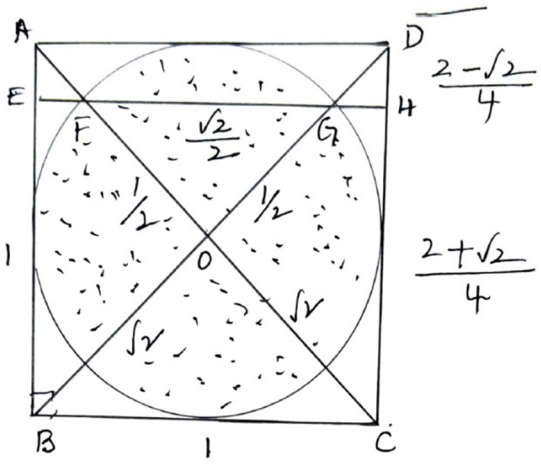
Square side = 1 Area = $(1)^2$

Circle Diameter = 1

Radius = ½

Area πr^2

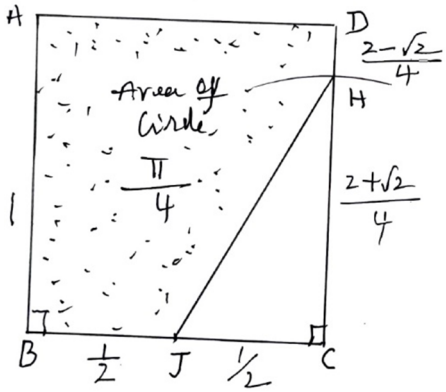
$$\pi \times \left(\frac{1}{2}\right)^2 = \frac{\pi}{4}$$



Area of Triangle CHJ

JC = ½

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



Area of triangle

$$\frac{1}{2} \times \frac{2+\sqrt{2}}{4} \times \frac{1}{2}$$

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

Finally,

Circle (Shaded area) + Triangle = Area of square

$$\frac{\pi}{4} + \frac{2+\sqrt{2}}{16} = 1$$

$$\frac{4\pi + 2 + \sqrt{2}}{16} = 1$$

$$4\pi + 2 + \sqrt{2} = 16$$

$$4\pi = 16 - 2 - \sqrt{2}$$

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

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

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