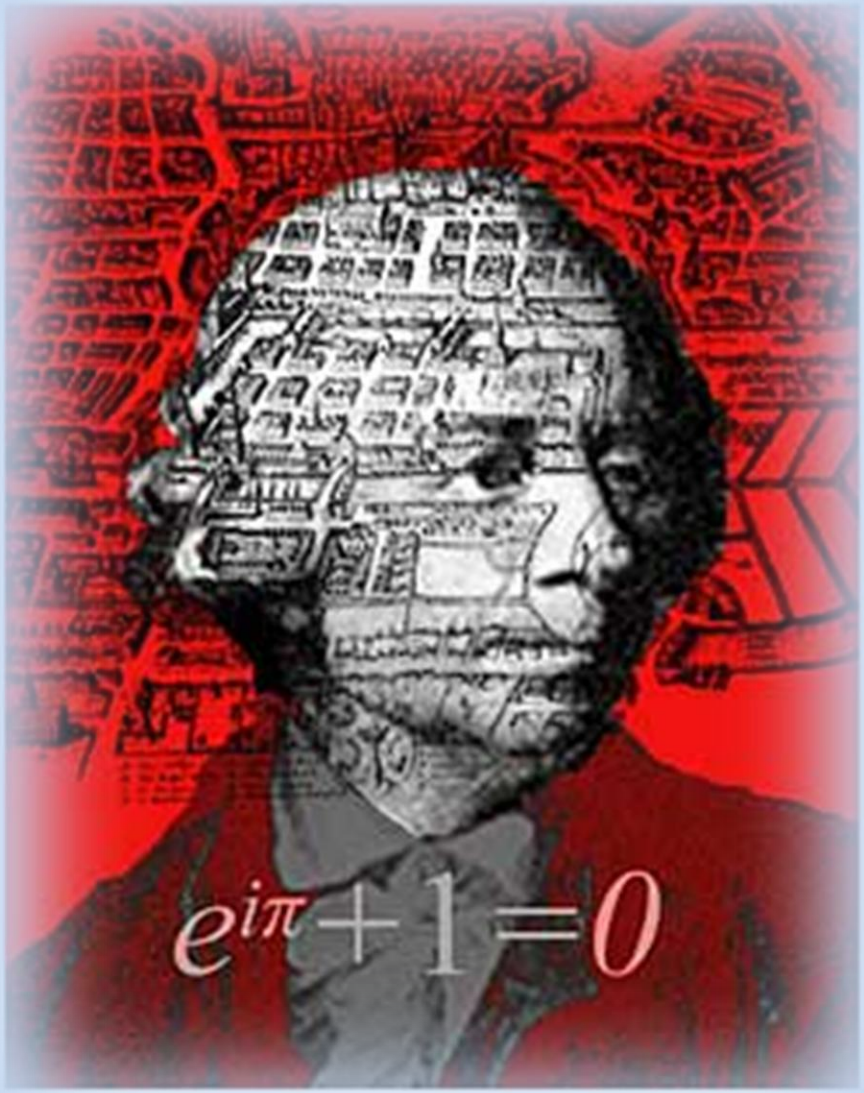
What is the 5 most important numbers in Mathematics?

Most important numbers in Math!

π , e , i , 0 , 1

Euler's Identity



$$e^{i\pi}+1=0$$

Euler's Identity

- But, he never state it or wrote it….
- But, its HIS identity!?
- Why do we give him credit….??
- Let us look

He did state the following…

Area of a quarter circle with radius a $= \frac{a^2}{4i}\ln(-1)$

$\frac{\pi r^2}{4} = \frac{a^2}{4i}\ln(-1)$

Area of quarter of a circle

$e^{i\pi} = e^{\ln(-1)}$

Let's cross multiply

$4i\pi a^2 = 4a^2 \ln(-1)$

$e^{i\pi} = -1$

Divide both sides by $4a^2$

$i\pi = \ln(-1)$

$e^{i\pi} + 1 = 0$

Take base e to both sides

It is actually specific case of Euler's Formula

$$e^{i\varphi} = \cos\varphi + i\sin\varphi$$

When $\varphi = \pi$

$$e^{i\pi} = \cos\pi + i\sin\pi$$

$$\cos\pi = -1 \qquad \sin\pi = 0$$

$$e^{i\pi} = -1 + i0$$

$$e^{i\pi} = -1$$

$$e^{i\pi} + 1 = 0$$