

Re: Quantum Pi

Source: <http://sci.tech-archive.net/Archive/sci.math/2005-12/msg03158.html>

- *From:* "Philippe 92" <nospam@xxxxxxxxxxxxxx>
 - *Date:* Fri, 16 Dec 2005 12:48:05 +0100
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Robert J. Kolker wrote :

> magicvsmagick@xxxxxxxx wrote:
>> I have decided that I would rather define Pi as 3, instead of using the
>> other definitions. I have a circle I created in photoshop that measures
>> 8 pixels across, however you measure it. The circle's circumference is
>> 24 pixels around. If you can accept this as a circle then Pi is 3.
>
> Why not use a square. The ratio of the circumference to the diameter is
> $4/\sqrt{2}$ which is the square root of 8 which is 2 plus a fraction.
>
> The real pi has some advantages. For example you get equalities
> like $\exp(i\pi) = -1$. I will bet you can't do that with your pixel thingy.
>
> Bob Kolker

Depends on value of e may be...
or of value of -1 (what is -1 pixel eh ?)
Sure OP would get some other very fundamental relation using his new
pi.

BTW I just (re-)read some paper about Gauss method to find the number
of grid points inside a circle (a true circle, not a special one)
that is the number of integers x, y with $x^2 + y^2 < r^2$
Just from the number of decompositions of n in sum of two squares being
 $r(n) = 4*d(n) - 4*d'(n)$ where $d(n)$ is the number of divisors of n of
the form $4k+1$ and $d'(n)$ the number of $4k+3$ divisors.
and finishing with the interesting formula :

Number of points = $1 + 4([r^2/1] - [r^2/3] + [r^2/5] - [r^2/7] \dots)$
with $[x]$ being integer part (floor) of x
The sum being finite because after some rank, the integer part becomes
0

with $r = 4$ (diameter 8), this gives 49 points inside,
resulting in $\pi = 49/4^2 = 3.0625$, what OP considers to be 3

$r = 10$ results into 317 points (summing 50 terms)
 $r = 100$ gives 31417 points (sum of 5000 terms, program required)

Regards.

—

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• **References:**

◆ **Quantum Pi**

◇ *From:* magicvsmagick

◆ **Re: Quantum Pi**

◇ *From:* Robert J. Kolker

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