

Re: sine and modulus ?

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- *From:* quasi <quasi@xxxxxxxx>
 - *Date:* Mon, 20 Oct 2008 17:19:43 -0400
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On Mon, 20 Oct 2008 15:23:07 EDT, amy666 <tommy1729@xxxxxxxxxxxx>
wrote:

quasi :

On Sun, 19 Oct 2008 15:54:30 EDT, amy666
<tommy1729@xxxxxxxxxxxx>
wrote:

quasi wrote :

On Sun, 19 Oct 2008 07:17:44 EDT,
amy666
<tommy1729@xxxxxxxxxxxx>
wrote:

im thinking about a sine
defined for modulus

algebra.

Sounds like fun.

$$\sin(a) \bmod p = b \bmod p$$

$$\cos(a) \bmod p = c \bmod p$$

$$b^2 + c^2 = 1 \bmod p$$

where the sine and cosine
can be computed by

their

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taylor series expanded at 0 and mod p.

But regardless of the modulus, the coefficients of

the

Taylor series are eventually all undefined

(division by 0).

huh ?

mod p is chosen such that all elements have

multiplicative inverses ...

All nonzero elements have multiplicative inverses.

What is the Taylor series for $\sin(x)$? (over the reals)

Now try it (mod 2). Next try (mod 3).

Do you see a problem?

$$x - x^3/3! + x^5/5! - \dots$$

computing divisions and powers is no problem in modulus.

So let's see you compute $\sin(1) \pmod{p}$ for a few selected values of p, for example, $p = 2$ and $p = 3$.

Don't worry about limits -- just compute the first few terms.

quasi

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