



HP Forum Archive 17

[[Return to Index](#) | [Top of Index](#)]

Re: Valentine's Day MC: A few modest insights, n! digits - part 3, anyone?

Message #1 Posted by [Gerson W. Barbosa](#) on 22 Feb 2007, 6:05 p.m.

Hello Valentin,

I have noticed these two discrepancies between your HP-15C and HP-71B programs, when checking against the HP-200LX:

N	HP-15C	HP-200LX	HP-71B
44315509	319615034	319615033	319615033
54336595	396700506	396700505	396700506

This suggests the HP-15C fails for N=44315509 and the HP-71B fails for N=54336595.

The 200LX equation is the following:

$$\text{NDF} = \text{INT}(N * \text{LOG}(N / \text{EXP}(1)) + \text{LOG}(2 * \text{PI} * N) / 2 + 1)$$

On the HP-200LX, the second result is 396700505.9999999. It appears to be one of the cases the guard digits are not enough... This should be checked with more digits, though. Apparently, these are the only two discrepancies in the range [1..100,000,000].

Best regards,

Gerson.

Edited: 22 Feb 2007, 6:11 p.m.

Re: Valentine's Day MC: A few modest insights, n! digits - part 3, anyone?

Message #2 Posted by [Valentin Albillo](#) on 22 Feb 2007, 7:14 p.m.,
in response to message #1 by [Gerson W. Barbosa](#)

Hi, Gerson:

Gerson posted:

"I have noticed these two discrepancies between your HP-15C and HP-71B programs, when checking against the HP-200LX [...] This suggests the HP-15C fails for $N=44315509$ and the HP-71B fails for $N=54336595$ [...] This should be checked with more digits, though."

Seems to me you're right. Checking with my SHARP PC-1475 produces:

N=54336595

396700505.99999998701

N=44315509

319615034.00000004201

which are absolutely correct to the 20 digits shown. I haven't checked that these are the only cases in the range, but this kind of off-by-one results isn't exactly a surprise since they are to be expected when working with transcendental functions with large inputs/outputs near the maximum significant digit limit of the computing device.

In these cases even two or three internal guard digits just aren't enough and either you restrict the range or else you use a double-precision capable handheld such as the SHARP PC-1475 or the SHARP PC-E500/E500S just like I did to test the anomalous cases above.

Thanks for sharing your interesting findings and

Best regards from V.

[[Return to Index](#) | [Top of Index](#)]



[Go back to the main exhibit hall](#)