

CoCoALib - Bug #1605

binomial: domain of defn?

02 Aug 2021 10:27 - John Abbott

Status:	Closed	Start date:	02 Aug 2021
Priority:	Normal	Due date:	
Assignee:	John Abbott	% Done:	100%
Category:	Tidying	Estimated time:	1.51 hour
Target version:	CoCoALib-0.99800	Spent time:	1.45 hour
Description What should the domain of definition of binomial(n,r) be? Most restrictive is $0 \leq r \leq n$. More flexible is $0 \leq r \leq \text{abs}(n)$. Or we could allow allow all pairs. The current implementations are inconsistent (depending on whether args are MachineInt or BigInt).			

History

#1 - 02 Aug 2021 11:57 - John Abbott

The sample implementations on the Wikipedia page accept all pairs of integers as args, with the convention that the value is 0 if the second arg is negative.

Wolfram proposes the following convention <https://mathworld.wolfram.com/BinomialCoefficient.html> (namely the value is 0 whenever $r < 0$ or $r > \text{abs}(n)$)

#2 - 02 Aug 2021 11:59 - John Abbott

- Status changed from New to In Progress
- % Done changed from 0 to 10

So the main question is: is it better to allow the fully general definition, or better to "protect the careless user"?

Right now I am favouring allowing the fully general definition.

#3 - 02 Aug 2021 14:03 - John Abbott

- Subject changed from binomial: range of defn? to binomial: domain of defn?
- Description updated

#4 - 02 Aug 2021 16:13 - John Abbott

- Status changed from In Progress to Resolved
- Assignee set to John Abbott
- % Done changed from 10 to 50

I have changed the code to use the fully general defn... not really sure why it was not already so defined.
Changed test-BigInt2.C as well.
Will check in a bit later.

#5 - 03 Aug 2021 10:01 - Anna Maria Bigatti

John Abbott wrote:

I have changed the code to use the fully general defn... not really sure why it was not already so defined.
Changed test-BigInt2.C as well.
Will check in a bit later.

Sounds ok to me.

#6 - 03 Aug 2021 14:19 - John Abbott

- *Status changed from Resolved to Feedback*
- *% Done changed from 50 to 90*

Mostly done now.

#7 - 14 Sep 2021 12:01 - John Abbott

- *Status changed from Feedback to Closed*
- *% Done changed from 90 to 100*
- *Estimated time set to 1.51 h*