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Efficient computation of $\sum_{i=0}^m \frac{a+i}{b+i}$ [closed]

Asked 2 months ago Active 1 month ago Viewed 41 times

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Salut

Is there an efficient way to calculate the following expression?

$$\sum_{i=0}^m \frac{a+i}{b+i}$$

Thx for your help...

[summation](#)
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[edited Aug 12 at 8:17](#)
[asked Jul 28 at 10:40](#)


 This isn't the right site to ask your question. Have you tried asking on Stack Overflow? – [Toby Mak](#) Jul 28 at 10:56

 Depending on the values of a, b, m , it's possible that there is a convenient way to merge terms – [Moko19](#) Jul 28 at 11:01

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1 Answer

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0

To me, in any environment which can compute the polygamma function (as Python), the shortest is more than likely

$$\sum_{i=0}^m \frac{a+i}{b+i} = (b-a)(\psi^{(0)}(b) - \psi^{(0)}(b+m+1)) + m + 1$$

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[answered Jul 28 at 11:38](#)


It works like a charm, thx very much for your input! – [jsg](#) Jul 29 at 7:47 

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1 Efficient computation of $\sum_{i=1}^{\lfloor \sqrt{N} \rfloor} \lfloor \frac{N}{i^2} \rfloor$

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