Subject: Re: geometric mean?
Posted by Craig Markwardt on Sun, 17 Sep 2000 07:00:00 GMT
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Andrew <noymer@my-deja.com> writes:

> I have no response so I assume the answer is to
> roll your own.
>
> I did:
>
> FUNCTION GEOMEAN, arr
> RETURN, EXP(TOTAL(ALOG(arr))/N_ELEMENTS(arr))
> END
>
> - Andrew

I am back from a long trip, so I'll bat a little cleanup here.

Andrew you asked about negative values of ARR. I think it's fair to say that the geometric mean is not meaningful (no pun intended) for negative values. Therefore I think it would be simplest to take the absolute value, like this:

```
FUNCTION GEOMEAN, arr
   RETURN, EXP(TOTAL(ALOG(ABS(arr)))/N_ELEMENTS(arr))
END
```

To go on to your more general question, the logarithm *is* in fact defined for negative values, unfortunately it's a complex number. Also, it's not unique. To prove that to yourself consider the fact that Y=EXP(I*X) is an oscillating function like COS and SIN, so a multitude of X values will give the same Y value (here I is the complex number COMPLEX(0,1)). If you really wanted to perform the geometric mean of negative numbers then be sure to cast them to the complex type before taking the logarithm. There will always be some ambiguity about the sign just as SQRT(X) can formally be either positive or negative.

Craig

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