

FLTMA: How to write (a,b,c) mod (a,b,c): six combinations

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How do I use the "verb" mod (modulus) to write a vector or matrix of three numbers a, b, and c, modulo the same three numbers?

Sure, I could write out

a mod a a mod b a mod c
b mod a b mod b b mod c
c mod a c mod b c mod c

as a matrix, but isn't there an operator that does this, that is, combine three numbers in a binary operation (modulo) in all nine possible ways? Of course, three of the nine are zero: the three on the diagonal.

I guess that's all I have to do. If W is a vector (a,b,c) then

W (some symbol) W = the above matrix.

Can you suggest a symbol? Should it be a binary operator, or prefix, or postfix?

I can make an analogy to multiplication. The column vector (a,b,c) times the row vector (a,b,c) gives the pattern above.

Modulus is somewhat analogous to division. Multiplication and division should distribute over addition. Is there a distributive property related to the modulus?

Let's see $(a+b) \bmod c = ((a \bmod c) + (b \bmod c)) \bmod c$.

If for convenience, all vector are row vectors then:

(transpose of (a,b,c)) * (a,b,c) gives the same pattern.

Yours,

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