

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

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Good morning.

I notice that column vector (a,b,c) \* row vector (a,b,c) gives a matrix, and that row vector (a,b,c) times column vector (a,b,c) gives a scalar, but that the scalar is, I think, the trace of the matrix.

Is that right?

If so, then we could overload the modulus operator, using cv and rv to indicate column and row vectors:

$$rv(a,b,c) \text{ mod } cv(a,b,c) = 0$$

$$\begin{aligned} cv(a,b,c) \text{ mod } rv(a,b,c) = \\ > a \text{ mod } a \ a \text{ mod } b \ a \text{ mod } c \\ > b \text{ mod } a \ b \text{ mod } b \ b \text{ mod } c \\ > c \text{ mod } a \ c \text{ mod } b \ c \text{ mod } c \end{aligned}$$

$$rv(a,b,c) \text{ mod } cv(p,q,r) = a \text{ mod } p + b \text{ mod } q + c \text{ mod } r$$

$$\begin{aligned} cv(a,b,c) \text{ mod } cv(p,q,r) = \\ a \text{ mod } p \ a \text{ mod } q \ a \text{ mod } r \\ b \text{ mod } p \ b \text{ mod } q \ b \text{ mod } r \\ c \text{ mod } p \ c \text{ mod } q \ c \text{ mod } r \end{aligned}$$

We could overload the division operator in a similar way to give a new, possibly useless, form of matrix division.

Might this be of some use to you, Dear Reader, in a application I hope is unrelated to FLTMA (Fermat's Last Theorem and Modular Arithmetic)?

Yours,

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