

Re: coordinate systems, variables w/ categories?

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> *Hi,*

>

> *A friend of mine was terribly confused today – his quoted one of his*

> *lecturers as saying that the derivative of a composite is equal to the*

> *composite of the derivatives or some such thing.*

That is true, if it is understood that the derivative *_at a point_* is a linear mapping from the one Banach space to the other. (That's how the derivative of a function of more than one variable is nowadays defined. The old way used a matrix of partial derivatives, with formulas to describe how the coefficients change with a change of coordinates.)

> *(I'm guessing the following comes up in geometry, but I haven't come*

> *across it before – actually, what I'm really asking is for someone to*

> *point me in a direction where I can read more on the topic).*

>

> *I've thought about those notions before, and managed to work out a*

> *rough context in which that made sense, namely in a category that has a*

> *rough notion of "coordinate systems".*

I'm not fluent in category theory, but it sounds to me like you're after "manifolds".

LH