

Re: MuPad 3.0 extraction of individual eigenvectors

Source: <http://sci.tech-archive.net/Archive/sci.math.symbolic/2004-11/0078.html>

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*>And here the problems starts.
>What are "standard things" because there
>are so many MuPAD libraries and every user
>has another view to what is important.*

I looked at the example on the Laplace Transform
John O'Flaherty used to discuss nested op's.

*>From that, I made up an example (below) which I
believe would be useful if included in the Help examples
on subs. Hopefully, John doesn't object on grounds of
copyright.*

Why I like this example is because it hits the user
right between the eyes with the fact that he/she can
heavily modify an object which is output from one
command and use it as input to another.

I know that another example in the subs Help
examples:

```
f := sin(z*(x + y));  
subs(f, x + y = z);
```

shows this, but for me it lacks the impact of this
example below which spells out how to do something which
is often a requirement.

Example to add to Help docs for subs...

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Modifying output from commands for use as input to other
commands.

Calculate the Laplace Transform of a pair of Ordinary
Differential Equations:

$$\begin{aligned}x'(t) &= x(t) + 2*y(t), x(0) = 1 \text{ and} \\y'(t) &= 5*x(t) + 2*y(t), y(0) = -2\end{aligned}$$

```
xfrm1:=transform::laplace( x'(t) = x(t) + 2*y(t), t, s );
xfrm2:=transform::laplace( y'(t) = 5*x(t) + 2*y(t), t, s );
```

Mupad gave the correct form of the transform, even though it didn't have the functions themselves to transform, so do replacement of individual terms with X and Y, and substitute in the initial values.

```
subx := transform::laplace(x(t),t,s) = X:
suby := transform::laplace(y(t),t,s) = Y:
Leqn1 := subs( xfrm1, subx, suby, x(0)=1);
Leqn2 := subs( xfrm2, subx, suby, y(0)=-2);
```

Then solve the two simultaneous equations algebraically.

```
solve({Leqn1,Leqn2},{X,Y});
```

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>I think you cannot solve this with one small document.

I think documentation needs to have an orientation towards motivation for using a process as well as explaining the process. The books, MuPad Tutorial and Computing Essentials are written illustrating motivation and 99.99% of the MuPad docs are also.

I think my example above (or one like it) for subs in the Help docs would demonstrate the incredible usefulness of subs within that document – it shows one important motivation.

I also think a similar motivationally oriented example for op in the Help docs would be enough to nail what I see as a 0.01% deficiency. It would be good in the Help doc to see an example where op is used to extract (from fairly deep) part of an object produced by one command and fed into another.

Currently subs shows op as a Related Function, but not the other way around. If this was fixed and two examples added to the Help docs along the lines I suggest, I think that is all that is needed – no other document required.

I hope you don't think I am being too presumptuous with my suggestions, but I think it helps sometimes if you can get input from someone outside the MuPad project, someone who does not have their fingers in the code and does not know it completely.

sci.math.symbolic: Re: MuPad 3.0 extraction of individual eigenvectors

>For german users (sorry not available in english) there are
>a lot of examples available under:
><http://schule.mupad.de/material/index.shtml>

I still find these useful. I get Google to translate into English and can usually figure out the meaning.

>MuPAD Pro Computing Essentials, ISBN: 3540219439
I am reading that now – excellent book.

>if you wants to work effective with such a system some
>basics must be known.

Completely agree.

Cheers,
Brad