Re: form equation takes at large value of time

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- *Date*: Mon, 30 May 2005 15:43:21 GMT

On 30 May 2005 05:12:00 −0700, "paul" <pjoseph@xxxxxxxxx> wrote:

>Hi,
>
>I have a question re. whether anything can be said about this
>equation's behaviour at large values of time, purely by inspection.
>The differential eqation is this:
>y" +Cy' + A*exp(−Bt)y = 0
>where A, B, C are constants, y is say displacement and t is time.
>
>My question is this:
>
>At time t = infinity, is it correct to say that the system represented
>by this equation can be described by:
>y" + Cy' = 0
>Based on the physical fact that it means that the "spring" has one to
>zero, I suspect the answer is yes, but would like to confirm.
>
You probably want to say "near t=infinity", because to consider
a diff. equation at just one value of the indep. var. makes no sense,
even more if this value is infinity ...

I don't quite understand your phys. arg. (what do you mean by
"has one to zero" ?) − may−be my English isn't good enough.

But I suggest to be careful with such arguments, one reason being
the "phenomena" of instability in certain diff. equations. May−be
you are right for your special equation (I did not analyze it) − in
some sense that should be made more precise, in any case
it cannot be *exact* that y" + Cy' = 0 for "large" t's, because if
A is not zero, this will be compatible with the original diff. eq.
only if y=0 for these t's, which of course is a solution of both
homogeneous linear equ., but surely you are not speaking of
this trivial solution ... − but it is probably not difficult to find
similar equ. where such "reasoning" is misleading.
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- ***Follow−Ups***:
  - ***Re: form equation takes at large value of time***
    - *From:* paul

- ***References***:
  - ***form equation takes at large value of time***
    - *From:* paul

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