

Re: --Ping Dave, changed my mind – I am still confused

Re: --Ping Dave, changed my mind – I am still confused

Source: <http://sci.tech-archive.net/Archive/sci.math/2008-02/msg01702.html>

- *From:* "The poster formerly known as Colleyville Alan" <nospam@xxxxxxxxxx>
 - *Date:* Sun, 10 Feb 2008 00:01:08 -0600
-

"Dave" <dave_and_darla@xxxxxxxx> wrote in message
news:947cb182-f687-46de-84e9-28004006262e@xx
On Feb 9, 7:19 pm, "The poster formerly known as Colleyville Alan"
<nos...@xxxxxxxxxx> wrote:

....

But, during the process of integration, I get $\ln|y| = -t + c$. When I exponentiate both sides, I get $|y| = e^{-(t+c)}$. Now, according to the definition of abs value, if the contents of y are positive, then $|y| = y$ and if the contents of y are negative, then $|y| = -y$. Since the RHS has a positive e raised to some exponent, this value is positive and therefore y would be positive.

This is incorrect. What is the solution of $|y| = 1$? It is $y = +- 1$, because $|1| = 1$ and $|-1| = 1$. The fact that the right hand side is positive does not mean that y is positive. Similarly, $|y| = e^{-(t+c)}$ means that $y = +- e^{-(t+c)}$, because $|e^{-(t+c)}| = e^{-(t+c)}$ and $|-e^{-(t+c)}| = e^{-(t+c)}$.

If I had raised a *negative* e to some power, then I would say $|y| = -y$, but since this is a positive e on the RHS, I do not see how that is possible in this case.

This doesn't follow. For example, the equation $|y| = -1$ has no solutions.

I realize that the initial conditions require that $c = -1$ but if $c_2 = e^{c_1}$, then I do not see how c_2 can be = 0 in this case. So, even though I replaced e^{c_1} with c_2 , since c_2 represents e^{c_1} , it does not seem to me that I can simply treat it like an arbitrary constant; it is a constant, but one that is +e raised to some power of an arbitrary c_1 .

Re: --Ping Dave, changed my mind – I am still confused

Re: --Ping Dave, changed my mind – I am still confused

Right. But this is where the +- sign comes in. c_2 is positive, so $+c_2$ is positive and $-c_2$ is negative. Writing $c_3 = +-c_2$, then c_3 can be positive if you choose the + sign and negative if you choose the - sign. Thus we can write $y = 2 + t + c_3 e^{-t}$, where c_3 is an arbitrary constant. If c_3 turns out to be negative, as it does in this case to fit the initial conditions, that simply means that we used the - sign in $+c_2$. Recapping your various c values: $c_3 = -1$, $c_2 = 1$, and $c_1 = 0$, because $-1 = -1 = -e^0$.

Dave

Got it. Thanks. I've been studying 8 hrs/day for the last 3 days and my brain has turned into Silly Putty. I should have been able to grasp this one earlier.

Thanks again, I appreciate the help.

Alan

.

Re: --Ping Dave, changed my mind – I am still confused