Bugs in the Ant Examples Problems PhL 8.2.12

My plots were looking odd and I reviewed things in the ant world and found lots of errors and fixed them.

1. Not much of my frames doc algebra has really been checked. Let's review what equations have really been checked against Marion.

- The centrifugal and Coriolis terms are correct with correct signs. The $m\ddot{\mathbf{b}}_S$ term also matches Marion. M&T include the $\dot{\boldsymbol{\omega}}$ term so that term is also OK. So my entire **a** expression is checked!

- The **v** equation also checks fully with Marion.

So I don't think either of these equations could be wrong in my Forward Problem summary.

2. Now let's check details in the ant problem section itself.

Section 15.

(a) Kinematics common to all Ant Problems

ARGGGG! I made a huge mistake, ignoring my own (1.1) + (1.2) theorem which brings in the inverse business!! This is going to screw up every equation in all three ant problems! So I will just march down making the edits in red. I added my theorem as (15.2a) and (15.4a) to avoid changing equation numbers.

So I painfully did thus until I reached (15.24) where I found another huge error in the **ω** x **v**' term.

Found yet another error in (15.25) !

I am now ready to rerun the Maple trajectories for Problem 1. They all look right now, they are going in the correct direction.

But my velocity plot still seems totally wrong!

OK, found more problems and fixed them. I think I am good through the three trajectory plots which have not changed.

5 PM. Thing are looking good. Things are updated through

<u>Some results to be used in the next problem.</u>

OK as of 6:30 PM I have made it to the start of Problem 3.

8/3/12 starting into Problem 3. I think I checked everything, but I am suspicious because my plots don't seem to agree with M&T, especially their last two plots. My trajectory always seems to loop the origin

and cannot loop without including the origin. Even the earlier plots are numerically different from M&T. They actually do a numerical integration. I think I have something wrong, maybe something major.

// Well, my conclusion is that Marion is wrong, not me.

I have now finished Problem 3, still think M&T are wrong.