

Sent: Saturday, November 15, 2003 10:53 AM

Question:

To solve problem 48 in chapter 14 I used the law of periods to find the radius of the satellite as it orbits around the earth. I then subtracted the earth's radius to find the altitude of the satellite. 3.58×10^7 - earth's radius = constant * 10^7 m I did not think this is right because it seems odd that a satellite away at a distance greater than the earth's radius. However, I could not find my error and another student also arrived at this answer.

Response:

Your technique is correct, but numerically the number you give (3.58×10^7) is close to the altitude (after subtracting the earth's radius) ... so there is probably some numerical issue.

You have an interesting intuition that a satellite of the earth cannot be at an altitude distance greater than the radius of the earth. Lets see, if this intuition is correct, how do we account for the Moon? -- clearly much, much further than this geocentric satellite and also clearly a satellite of the earth. Here is a case of your previous intuition failing you, and so should be revised. It would be useful to understand more specifically what your objections to such a distance might arise from.
