

> Subject: Astrolabe formula
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 > Date: Tuesday, June 11, 2013, 1:17 AM
 >
 > In your "Formula Derivation for Planispheric Astrolabes,"
 > how do you get from $(R \cdot R \cdot \cos L) / R + (R \cdot \sin L)$ to $(R \cdot \cos L) / (1 + \sin L)$?
 >
 > I was able to follow all of the steps until that one.
 >
 > Thanks,

Your first formula:-

Your last formula:-

$$\frac{(R \cdot R \cdot \cos L)}{R + (R \cdot \sin L)} \quad \Rightarrow \quad \frac{(R \cdot \cos L)}{(1 + \sin L)}$$

Page 136 of the appendices has the above, although it has a minus sign on the bottom lines, not a plus. However, using your formula:-

$$\frac{(R \cdot R \cdot \cos L)}{R + (R \cdot \sin L)}$$

divide both top and bottom by R

top line:-

$$(R \cdot R \cdot \cos L) / R$$

one of the "R"s vanishes because it is an $R \cdot R \cdot \cos L$ construction

$$(R \cdot \cos L)$$

bottom line:-

$$(R + (R \cdot \sin L)) / R$$

remove R from $(R + (R \cdot \sin L))$

$$(R \cdot (1 + 1 \cdot \sin L)) / R$$

$$(1 \cdot (1 + 1 \cdot \sin L)) / R$$

$$(1 + \sin L)$$

$$(1 + \sin L)$$