Ancient Astronomy, Assignment for Monday, Sept. 25

Ascensions and Spherical Trigonometry

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1. Evans Exercise 2.10, Part 1, p. 105

In class, we derived two formulae that are companions to the formula on p. 105. We used that the sine function is odd and the cosine function is even.

Begin by writing down those two formulae.

Write down the values of β and λ that you will use, and the value of ϵ. Because modern calculators can work in radians or decimal degrees, but generally not sexagesimal, write these values down in decimal degrees.

Punch it all in to your calculator. If you remember in class we got about 12° and 153° for δ and α, respectively. If you don't get something close to that, figure out went wrong.

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2. Sign and Tens of the Sun on May 30th

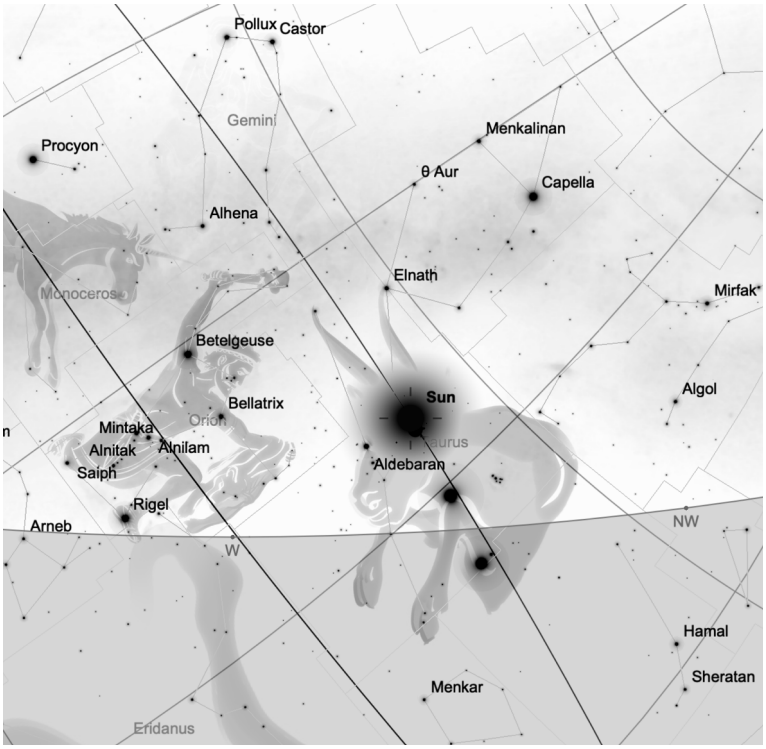
You will be using the chart on the next page to do this problem.

(a) Three Zodiac constellations are visible on the chart which is a view of sunset at 7pm on May 30th. One of the Zodiac constellations is at the center. Another is faintly drawn. What is it?

(b) A third isn't even faintly drawn. What is it?

(c) The Sun is the big dark blob. Using the archaic notation in Table 2.4 on p. 110-111, estimate the Sign and Tens of the Sun at this time.

(d) Where will the Sun be in the stars in a month?



3. Day and Night on May 30th

(a) Using your answer for 2(c), and the table, what is the Sign and Tens of what is rising as the Sun is setting?

(b) Using Table 2.4 on pp. 210, and 211 what is the length of the night at Deep Springs in hours and minutes on May 30th? Please show your work clearly so I can check it. Since there isn't a column for Deep Springs, use New London, Connecticut, which is about 4° higher in latitude than we are.

(c) Again using Table 2.4 on pp. 210, and 211 what is the length of the day on May 30th? Please show your work clearly.

CROSS-CHECKS FOR SILLY MISTAKES: Does what you got in (b) and (c) add up to 24 hours? It should. Is the day longer than the night? It better be. It is pretty summery at Deep Springs on May 30th.