

## Take-home Exercises #7/8: Astrolabe

Name: \_\_\_\_\_

***Due November 13***

10 points Total
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To answer all but the last two questions, set your astrolabe so that the star **Altair is rising** (middle of star symbol on eastern horizon). All time references are local solar time (the time read directly from the astrolabe—no conversion). Answers should be given to the nearest degree, nearest 2 minutes, or nearest day.

1. What is Altair's azimuth, to the nearest degree? (Note azimuth lines are every  $5^\circ$ .)
2. What bright star is located at azimuth  $270^\circ$ , altitude  $7^\circ$ ? (Note altitude lines are every  $2^\circ$ .)
3. What bright star is just about to cross the meridian in the south?

Star's azimuth:

Star's altitude:

4. True or False: When Altair is rising, the star Sirius is visible.
5. If the date is March 20, what is the time represented by this astrolabe setting (Altair rising) (to the nearest 2 minutes)? Remember a.m. or p.m.
6. If the date is October 31 (or November 0), what time does this astrolabe setting represent?

At this date and time, what is the Sun's azimuth?

At this date and time, what is the Sun's altitude?

7. For the same astrolabe setting (Altair rising), what date is the Sun setting? Estimate to the nearest day.
8. At the same astrolabe setting, what date would astronomical (morning) twilight begin?
9. (\*\*Altair not rising—New Setting) Set the astrolabe for sunrise on February 28. According to the astrolabe, what time does the Sun rise?
10. (\*\*New Setting) Onboard ship, we have been watching Arcturus getting higher. We measure its altitude to be  $29^\circ$ . If we head toward Arcturus, what direction will we be going (azimuth)?

The time is 1:55 a.m. What is the date?