

NORTHERN ILLINOIS UNIVERSITY

PHYSICS DEPARTMENT

Physics 162 – Introductory Astronomy

Fall 2025

Problem Set #10

Problem Set Due: Thurs., Dec. 4, 2025

Read OpenStax: Chapter **27 & 29**

Show explicitly all your work for full credit.

Chapter 27:

- | | |
|-----------------------|------------------|
| 1. Expert TA: 27.1.3 | multiple choice |
| 2. Expert TA: 27.1.7 | multiple choice |
| 3. Expert TA: 27.1.29 | multiple choice |
| 4. Expert TA: 27.2.1 | show calculation |
| 5. Expert TA: 27.3.1 | draw figure |
| 6. Expert TA: 27.3.2 | draw figure |
| 7. Expert TA: 27.6.5 | true/false |
| 8. Expert TA: 27.6.20 | true/false |

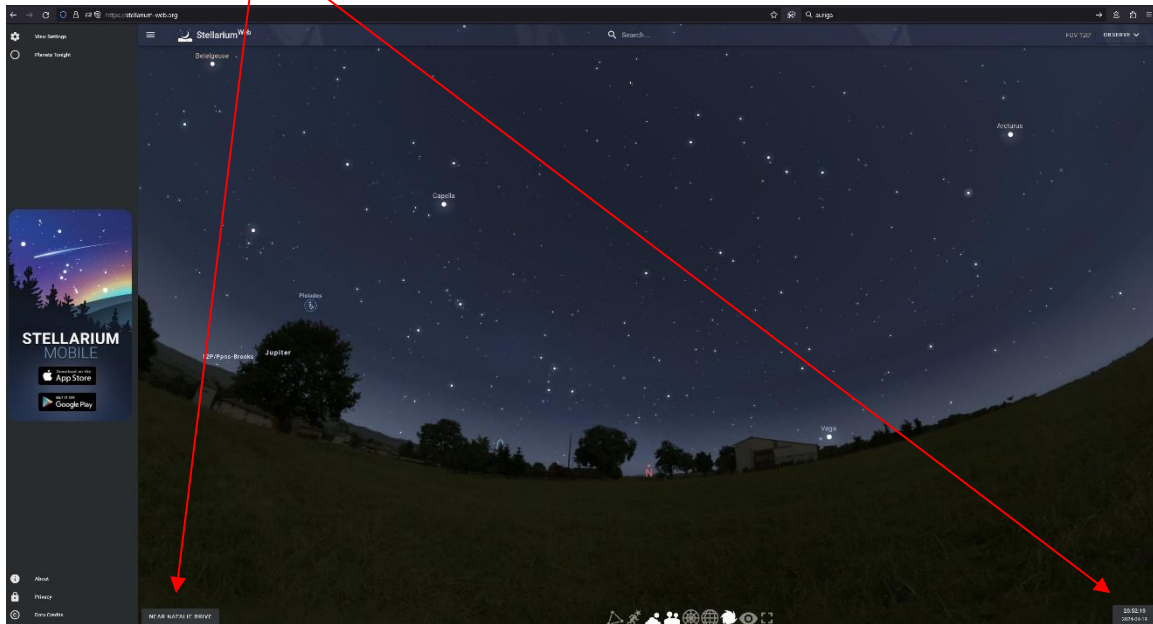
Chapter 29:

- | | |
|------------------------|------------------|
| 9. Expert TA: 29.1.1 | multiple choice |
| 10. Expert TA: 29.1.6 | multiple choice |
| 11. Expert TA: 29.1.17 | multiple choice |
| 12. Expert TA: 29.1.35 | multiple choice |
| 13. Expert TA: 29.2.7 | show calculation |
| 14. Expert TA: 29.3.4 | draw figure |
| 15. Expert TA: 29.6.4 | true/false |
| 16. Expert TA: 29.6.8 | true/false |

See Problem #17 (Stellarium problem) on next page

17. Go to the Stellarium Webpage: <https://stellarium-web.org/>

Click on the **Unknown** button in the bottom left corner and select your location as DeKalb, IL. The **date** in the bottom right corner should be today in the evening (if you click on it, you can change the day and time).



Click on the **constellation** button to see all the constellations in the sky above DeKalb in the evening. Several of the easiest constellations to see in the sky are the Big Dipper (looks like a spoon), the Little Dipper (looks like a little spoon), and Cassiopeia (looks like the letter “M” or “W” depending upon your perspective).



Turn off the **atmosphere** button so that the sky looks black. Click on the “**view settings**” button (in the upper right hand corner) and select “Meridian Line”. Orient the screen so that you are facing north and the meridian line is straight and vertical.

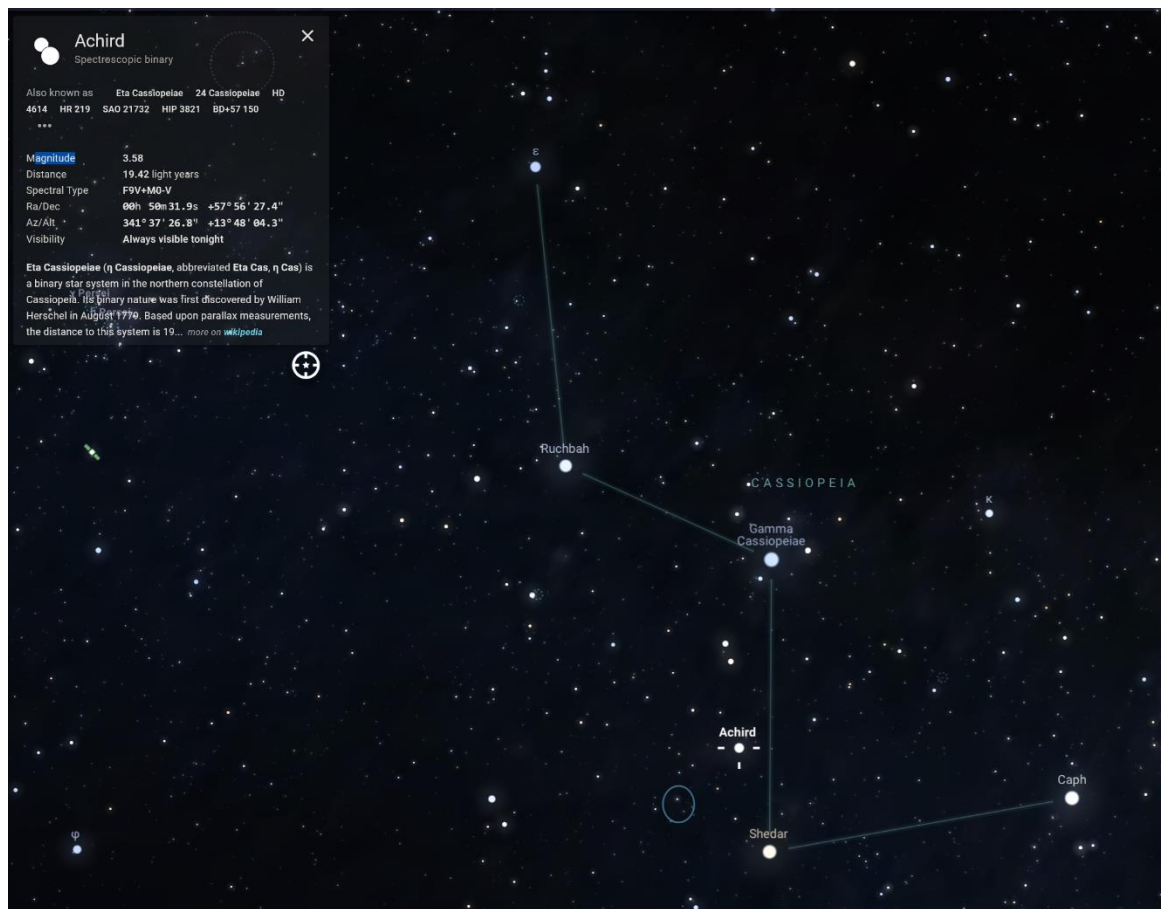
(a) You may see a lot of bright objects that are moving quickly on the screen. What are they? UFO’s? (you can select them by clicking on them).

(b) Take a magnified picture (*so that the names of the stars show up*) of the Big Dipper, Little Dipper, and Cassiopeia constellations. Use the *snipping tool* in Windows or the Mac to take the picture:

For Windows: Press **Windows logo key + Shift + S** at the same time

For the Mac: press the **Shift+Command+5** keys at the same time

An example of Cassiopeia is shown below:



(c) Which star is the closest to the North Celestial Pole? Turn on the **Equatorial Grid**. Take a magnified picture of this star (so that its name shows) with the grid turned on.



Combine your handwritten homework with your 4 pictures into a single Word document and save as a pdf file and upload to Blackboard.

Try to see if you can find these constellations in the night sky using the locations given by the stellarium (you will have to determine how to face north).