

LSW #29: *Brightness of Stars and Stellar Magnitudes*

Do Question 1, 2, 4, 6a – f

All these problems involve going from Δm to Brightness Ratio. You either calculate the Δm or are given it in the lab.

You are to do all the problems assigned in 4 and 6 by using the $2.512^{\Delta m}$ formula for Δm that was presented in lecture.

Round off your resulting ratios to 3 significant figures (e.g. 4.21:1, 12.4:1, 98300:1).

Helpful note: Though the problems may read differently, the mathematical process is identical for all problems. There is only one variation—in some problems you are given Δm and in others you must first calculate it. Simply subtract the smaller magnitude (brighter star) from the larger (fainter star). Entering a positive Δm results in a ratio > 1 . This means that the number you calculate expresses the brighter star relative to the fainter.

Calculator Hint: To solve $2.512^{\Delta m}$ first enter 2.512, then strike the $\langle y^x \rangle$ or $\langle \wedge \rangle$ key. Then enter your Δm value and strike the $\langle = \rangle$ or $\langle \text{Enter} \rangle$ key.

Extra Credit

Do Question 5: You must use the Δm —Brightness Ratio table on page 2.

I give no help on the extra credit work; you must figure it out.

Remember: Show calculation setups for all problems. Setups and scratch work may be done on (enclosed) scratch sheets.

The final answers are to be written in the spaces provided.

All answers are ratios, so there are no units to label your answers.