

Assignment

1. The apparent magnitude of the Sun as seen from the Earth is -26.7 . What is the apparent magnitude of the Sun as seen from Jupiter (orbital radius 5.2 AU)?
2. If a star has an apparent magnitude $m = 0.4$ and a parallax of $0.3''$, what is (a) the distance modulus (b) the absolute magnitude?
3. What is the distance (in parsecs) of a star whose absolute magnitude is $+6.0$ and whose apparent magnitude is $+16.0$.
4. The magnitude difference between two stars A & B is 14. What is the luminosity ratio of A & B. The ratio of luminosities of two stars C & D is 1000. What is the difference in the magnitude of C & D.
5. Alpha Centauri is a visual binary system with a combined apparent magnitude of -0.29 . The pair can be separated easily in a small telescope, and it is found that the apparent magnitude of the brighter component is -0.01 . What is the apparent magnitude of the fainter component?
6. Two stars are known from their spectra to have the same luminosity. Star B is three times as far away as star A.
 - (a) What is the ratio of the flux received from star A to that received from star B?
 - (b) If star B has an apparent magnitude of 8.0, what is the apparent magnitude of star B?
 - (c) Star B is a member of a visual binary. Its companion star, C, has apparent magnitude 8.6. What is the ratio of the flux received from C to that received from B?
 - (d) What is the combined magnitude of the B+C system, seen through a small telescope which does not resolve them as separate stars?