

ASTRO 130, Spring 2017, Homework 5 (on Chapter 15)

Name: _____ Date: _____

1. We are about 8000 parsecs from the center of our Milky Way galaxy, and the smallest parallax angle we can measure from orbiting observatories is about 0.001 arcseconds. How far toward the galactic center can we see with this technique (ignoring galactic dust and other obstacles)?
 - A) all the way to the center
 - B) about halfway to the center
 - C) about an eighth of the way to the center
 - D) only $0.008 = 1/125$ of the way to the center
2. If Mercury is at 0.4 AU, the Moon is at 1.0 AU, and the inverse-square law holds, how much more light falls on a unit area of Mercury's surface than on an equivalent area of the Moon?
 - A) 6.25 times more
 - B) 0.4 times as much
 - C) 2.5 times more
 - D) 16 times more
3. If Star A has an apparent magnitude of +5, and Star B has an apparent magnitude of +10, then
 - A) Star A is twice as bright as Star B.
 - B) Star B is twice as bright as Star A.
 - C) Star A is 100 times as bright as Star B.
 - D) Star B is 100 times as bright as Star A.
4. A star whose absolute magnitude M is + 2.2 is seen to have an apparent magnitude when viewed from Earth of $m = + 5.2$. How far away is the star?
 - A) 40 pc
 - B) 130 pc
 - C) 10^3 or 1000 pc
 - D) 4 pc

5. The spectral class of the Sun is G2 and the star Enif is K2. From this information, we know that Enif is
- A) intrinsically fainter than the Sun.
 - B) cooler than the Sun.
 - C) intrinsically brighter than the Sun.
 - D) hotter than the Sun.
6. Where on the Hertzsprung-Russell diagram do most local stars in our universe congregate?
- A) in the supergiant area, where the most massive stars spend a significant time
 - B) in the giants area, where most stars spend the longest time of their lives
 - C) in the white dwarf area, the “graveyard” of stars
 - D) on the main sequence where stars are generating energy by fusion reactions
7. The star Spica is classified as B1 V, which means that it is a
- A) cool main sequence star.
 - B) cool giant.
 - C) hot supergiant.
 - D) hot main sequence star.
8. Observations of binary stars have helped astronomers to determine which important scientific parameter?
- A) the universal gravitational constant
 - B) stellar masses
 - C) the speed of light in deep space
 - D) the sizes of stars
9. The radial-velocity curve of a star in a binary star system is a plot against time of the
- A) speed of the star in a direction perpendicular to the line of sight to the star.
 - B) temperature of the star as determined from the movement of the peak wavelength of its spectrum.
 - C) position of the star in celestial coordinates.
 - D) variation of Doppler shift of its spectral lines and hence of its speed toward or away from us.