

1. Where would you look for an event horizon?

- a. in the magnetosphere of a neutron star
 - b. near a black hole
 - c. at the edge of the visible universe
 - d. in the photosphere of a star (e.g., the Sun)
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2. The accretion disk surrounding a black hole is characterized by the emission of

- a. red light.
 - b. blue light.
 - c. radio waves.
 - d. X rays.
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3. The Local Group is

- a. the family of planets around the Sun.
 - b. a cluster of galaxies in which the Milky Way is located.
 - c. a star cluster to which the Sun belongs.
 - d. the name of the spiral arm of the Milky Way Galaxy in which the Sun is located.
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4. Quasars are

- a. sources of intense radio energy only, not visible at other wavelengths, and relatively large but very distant.
 - b. starlike sources of great energy located in the Milky Way Galaxy and intrinsically very small.
 - c. prolific sources of energy, starlike in appearance, and intrinsically small.
 - d. sources of great energy, very large in actual size, and shaped like galaxies.
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5. According to Hubble's law, how old is the universe? (H_0 = Hubble's constant)

- a. H_0
 - b. $1/H_0$
 - c. r/H_0 (where r = distance in Mpc)
 - d. v/H_0 (where v = recession velocity in km/s)
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6. Where is the Earth?

- a. near the edge of an expanding universe, as shown by the microwave radiation coming to Earth from the edge
 - b. near but probably not right at the center of the universe, as shown by the fact that the edge is so far away from Earth
 - c. at the exact center of an expanding universe, as shown by the universal expansion away from Earth in all directions
 - d. somewhere in an expanding universe but not in any special part of it
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7. The cosmic background radiation is the

- a. result of the radioactive decay of heavier, unstable elements produced in supernova explosions.
 - b. electromagnetic remnants of the explosion in which the universe was born.
 - c. faint glow along the elliptic, caused by sunlight scattering from dust particles.
 - d. radio noise from hot gas in rich clusters of galaxies.
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8. The cosmic microwave background was discovered by

- a. scientists testing a new antenna and receiver for satellite communications.
 - b. rocket-borne telescopes that also discovered X-ray sources in space.
 - c. the *Voyager 2* spacecraft during one of its “coasting” periods between planetary encounters.
 - d. the IRAS satellite, which produced an all-sky infrared survey.
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