

Astronomy 305: Life in the Universe
Homework 12: Chapter 12

Total points: 38

1. (20 pts) Define each of its terms, and describe the current state of understanding regarding the possible values of each term. [Use the Drake Equation from the lecture notes, not from the book.]
2. (10 pts) Briefly explain the idea of the encephalization quotient (EQ). How does it suggest that humans are indeed intelligent? What does it tell us about intelligence among other animal species?
3. (2 pts) The end result of a calculation with the Drake equation is intended to be an estimate of
 - (a) the number of worlds in the galaxy on which life has arisen;
 - (b) the number of worlds in the galaxy on which intelligence has arisen;
 - (c) the number of worlds in the galaxy on which civilizations are transmitting signals now.
4. (2 pts) Which of the following statements is true about the terms in the Drake equation?
 - (a) Astronomical research will soon give us firm values for all of the terms.
 - (b) Some of the terms depend on sociology and cannot be determined by astronomers alone.
 - (c) We already know the terms of the equation to an accuracy of within a factor of two.
5. (2 pts) Which of the following would lead an animal to a higher encephalization quotient (EQ) as it evolved?
 - (a) growth in both body size and brain size;
 - (b) growth in body size but not in brain size;
 - (c) growth in brain size but not in body size.
6. (2 pts) Two-way conversation with other societies is probably unlikely, even if we make contact. This is mainly because
 - (a) aliens won't speak our language;
 - (b) it might be dangerous to get in touch;
 - (c) the time it takes for signals to cross the distance to them could be centuries or more.