

## Introductory Astronomy

NAME:

**Homework 0: A Philosophical and Historical Introduction to Astronomy:** Homeworks and solutions are posted on the course web site. Homeworks are not handed in and not marked. But many homework problems (~ 50–70 %) will turn up on exams.

- Did you complete reading-homework-self-testing for the Introductory Astronomy Lecture (IAL) by the weekly due date?
  - YYYessss!
  - Jawohl!
  - Da!
  - Sí, sí.
  - OMG no!
- It is somewhat traditional or at least not unusual to begin a book or course on \_\_\_\_\_ with a philosophical/historical/poetical statement.
  - agronomy
  - astronomy
  - metallurgy
  - proctology
  - tautology
- “Let’s play *Jeopardy!* For \$100, the answer is: An activity that involves a study of objective reality and the scientific method.”
 

What is \_\_\_\_\_, Alex?

  - accounting
  - poetry
  - home repair
  - homework
  - science
- The scientific method can be schematically described as a/an:
  - hypothesis of theorizing and experiment/observation.
  - cycle of theorizing and experiment/observation.
  - reductive process.
  - integrative process.
  - cycle of experiment and observation.
- Most people would agree that science is:
  - digressive.
  - regressive.
  - progressive.
  - impressive.
  - depressive.
- “Let’s play *Jeopardy!* For \$100, the answer is: To give an inadequate, but arguably useful, definition: A human pursuit which has no absolute standard (although personal or local standards are common and probably essential) that, among other things, tries to extend human understanding and to give pleasure, sometimes of a very qualified sort.”
 

What is \_\_\_\_\_, Alex?

  - a science
  - nonsense
  - geology
  - of no conceivable use
  - an art
- Physics can be briefly defined as the science of:
  - human relations.
  - sports and leisure.
  - matter and motion.
  - matter and rest.
  - light.
- “Let’s play *Jeopardy!* For \$100, the answer is: It is the branch of physics that is the search for very general laws and very general results (which are derived from those general laws). The general laws and results are always (or almost always) expressible as mathematical formulae.”
 

What is \_\_\_\_\_, Alex?

  - applied physics
  - fundamental physics
  - astronomy
  - low-temperature physics
  - geophysics
- “Let’s play *Jeopardy!* For \$100, the answer is: ‘Just so’ in physics.”
 

What is \_\_\_\_\_, Alex?

  - a story by Rudyard Kipling
  - essential
  - eternal
  - fundamental
  - infernal
- Astronomy includes both \_\_\_\_\_ and fundamental physics.
  - psychology.
  - applied physics.
  - other than physics.
  - fundamental physics.
  - indifferent physics.
- “Let’s play *Jeopardy!* For \$100, the answer is: In the opinion of the instructor, it is any important theory that applies to reality in some form. Such theories are in some sense and to some degree independent of other theories including the true fundamental theory of physics. They emerge from reality and are

like Platonic ideals. Another view is that it is a theory that applies to a complex system but not to that system's components. It emerges from the complexity. The two views aren't all that far apart if you define complexity broadly enough."

What is a/an \_\_\_\_\_ theory, Alex?

- a) convergent    b) emergent    c) divergent    d) specious    e) faux
12. Evolution by survival of the fittest is used in computer calculations to find optimum solutions to problems where the solutions are treated as breeding entities. The best known of such techniques is called the:
- a) genetic methodology.                      b) genetic algorithm method.                      c) Darwin algorithm method.  
d) no-name method.                      e) evolution method.
13. In the multiverse paradigm, it is posited that the 2nd law of thermodynamics must \_\_\_\_\_ absolutely everywhere in the multiverse—in all the pocket universes and all the regions between them—even though the multiverse outside our pocket universe may have different physics in most respects from our pocket universe.
- a) hold    b) not hold    c) be impossible    d) be infernal    e) be notorious
14. "Let's play *Jeopardy!* For \$100, the answer is: It a technique in statistics for dealing of the probability of truth of theories to your knowledge. It could be called the scientific method quantified."
- What is \_\_\_\_\_, Alex?
- a) Bayes' theorem    b) Occam's theorem    c) Bayesian analysis    d) Occam's razor  
e) Bayes' axiom
15. The aphorism "Things have to be the way they are or we would not have a chance of being here to observe them." loosely summarizes:
- a) the cosmological principle.    b) the anthropic principle.    c) Bayesian analysis.  
d) the fundamental principle.    e) falsifiability.
16. Astronomy can be considered both applied physics (since it uses all branches of physics) and fundamental physics since it includes:
- a) psychology.    b) biology.    c) cosmetology.    d) cosmology.    e) nuclear physics.
17. A physical science can be defined as:
- a) an art form.    b) a science that depends strongly on physics.    c) a science that does not depend on physics at all.    d) a science that is identical with fundamental physics.  
e) a pointless pursuit.
18. The following are usually considered physical sciences:
- a) proctology, theosophy, and Deuteronomy.    b) proctology, immunology, and biology.  
c) chemistry, geology, and meteorology.                      d) proctology, geology, and biology.  
e) chemistry, geology, and biology.
19. In the broadest sense, \_\_\_\_\_ is the study of all extraterrestrial phenomena and also terrestrial phenomena that fall into the same categories as extraterrestrial phenomena.
- a) agronomy    b) antimony    c) astronomy    d) antiquity    e) antigone
20. Although one can quibble, most would agree that astronomy is the best candidate for being:
- a) the oldest empirical science.    b) the newest empirical science.    c) of little interest.  
d) the same as astrology.    e) the queen of the sciences.