



1. The sum of this function's values for the angles of a non-right triangle equals the product of its values for those angles. The hyperbolic form of this function equals e to the two- x minus one over e to the two- x plus one. This function's antiderivative is the natural logarithm of the secant, and its derivative is the secant squared. The secant squared minus one equals the square of this function. For 10 points, name this trig function that equals opposite over adjacent in a right triangle.

ANSWER: tangent [accept the tangent of any variable, such as "tangent of x "]

185-13-93-13101

2. This philosophy was espoused by Spanish writer Miguel de Unamuno in *The Tragic Sense of Life*. This philosophy was used to argue that women are treated as "the Other" in the feminist text *The Second Sex*. This discipline "is a humanism" according to a lecture delivered by the author of *Being and Nothingness*, leftist intellectual Jean-Paul Sartre. For 10 points, name this philosophy that broadly concerns the way humans make their own meaning for their lives.

ANSWER: existentialism

080-13-93-13102

3. These structures cannot be assembled in the cells of the nephron in people with polycystic kidney disease, and they line the Fallopian tubes. A group of Protozoans characterized by the presence of these structures includes the *Paramecium* genus. A 9 plus 0 arrangement of microtubules, as opposed to a 9 plus 2 arrangement, differentiates the non-motile, or primary, and motile forms of this structure. For 10 points, identify these hair-like projections from a cell that are structurally identical to flagella.

ANSWER: cilia [or cilium]

066-13-93-13103

4. The owner of a mansion called Iranistan, this man sponsored legislation outlawing contraceptives in Connecticut that was overturned in the landmark *Griswold* case. This man brought the "Swedish Nightingale," Jenny Lind, to America and employed men such as General Tom Thumb and the conjoined twins Chang and Eng. For 10 points, name this man who, with James A. Bailey, founded a circus known as the Greatest Show on Earth.

ANSWER: Phineas Taylor Barnum

030-13-93-13104

5. A converted palace in this country serves as a part of its Hermitage Museum. An 85-meter tall statue of a woman with wings and a raised arm holding a sword located in this country is called "The Motherland Calls." In the sixteenth century, a cathedral was built in this country that now comprises nine chapels each topped with a colorful onion dome. For 10 points, name this country where St. Basil's Cathedral in Red Square is located, only a short distance from the Kremlin.

ANSWER: Russian Federation [or Rossiya; or Rossiyskaya Federatsiya]

023-13-93-13105

6. In an AC circuit, the impedance of these elements is inversely proportional to the frequency. When one of these devices is connected to an inductor, the current exhibits simple harmonic oscillation. When in parallel in a circuit, their namesake quantities add, and an early example of them was the Leyden jar. Their strength can be increased using a dielectric, and they frequently consist of a series of parallel plates. The strength of these devices is measured in farads. For 10 points, identify these circuit elements that store charge.

ANSWER: capacitors

226-13-93-13106

7. In this location, a character declares that one "who overcomes / by force hath overcome but half his foe" in an inspiring speech. The description of this place includes a catalog of gods like Astoreth, Thammuz, and Osiris. In this location, which is illuminated by "darkness visible," Mammon digs "ribs of gold" out of the ground to build the city of Pandemonium. For 10 points, name this location from *Paradise Lost* where Satan declares he would rather reign than serve in Heaven.

ANSWER: Hell [do not accept or prompt on Pandemonium]

080-13-93-13107

8. A large, dark surface on this satellite is called Galileo Regio. The bright regions on this satellite contain grooved terrain thought to be caused by tidal heating, since it consists about equally of ice and rock. This satellite has an iron core that generates a magnetic field, making it the only moon with a magnetosphere. This satellite is in a 1:2:4 orbital resonance with Europa and Io. For 10 points, identify this largest moon in the Solar System and of Jupiter.

ANSWER: Ganymede

066-13-93-13108

9. Nationalization of this country's copper industry began during the administration of Carlos Ibañez. It fought two other countries for control of nitrate deposits in the Atacama Desert in the War of the Pacific. The "tank putsch" failed to remove its first Marxist president, who was removed just a few months later in 1973. For 10 points, name this country whose president was Salvador Allende until a coup installed Augusto Pinochet.

ANSWER: Chile

121-13-93-13109

10. This man is told to "kiss the plaintiff and the wifey" in a call-out on Ludacris' "Number One Spot." In a popular video, he expresses confusion at what it means for Sting "to play us out" and repeatedly screams "WE'LL DO IT LIVE!" This author of *Killing Lincoln* and *Killing Kennedy* debated Jon Stewart in a "rumble" before the 2012 election. For 10 points, name this conservative commentator who hosts his namesake "Factor" on Fox News.

ANSWER: Bill O'Reilly

080-13-93-13110

11. The van Allen belts shuttle particles between the magnetosphere and this region. A layer in this region is named for Arthur Kennelly and Oliver Heaviside. At night, only the F layer of this region is significantly present, but it has D, E, and F layers during the day. This layer refracts radio waves, making long-range radio communication possible. For 10 points, identify this region of the atmosphere characterized by the presence of particles ionized by solar radiation.

ANSWER: ionosphere [prompt on thermosphere]

066-13-93-13111

12. A Shinto goddess of this object was the sister of Susanoo and Tsukiyomi and was named Amaterasu. Another god of this object had to defeat the evil serpent Apep every day as he passed through the underworld; that god of this object was at one point combined with the god Amun. A third god of this object had a son named Phaeton lose control of his light-bringing chariot. For 10 points, name this astronomical object whose representative gods included the Egyptian Ra and Greek Helios.

ANSWER: **Sun** gods [or **solar** gods]

023-13-93-13112

13. In a case in which the mayor of this city was sued, the Supreme Court ruled that Fifth Amendment restrictions did not apply to this city. Confederate sympathizers in this city clashed with Massachusetts militia in the Pratt Street Riot, and Governor Spiro Agnew's response to a 1968 riot in this city prompted Richard Nixon to make Agnew his running mate. For 10 points, name this city that was founded by Lord Calvert as a haven for Catholics and was the site of the siege of Fort McHenry.

ANSWER: **Baltimore**

030-13-93-13113

14. This artist's *The Milkmaid of Bordeaux* is one of several works that may be of his companion Leocadia Weiss. This court painter to Charles IV decorated one wall of La Quinta del Sordo, or the Villa of the Deaf, with *Saturn Devouring His Son*, one of the *Black Paintings*. In a painting of the brutality of Napoleon's occupying army, he showed a man in a white shirt with outstretched arms being shot by French troops. For 10 points, name this Spanish artist of *The Third of May, 1808*.

ANSWER: Francisco José de **Goya** y Lucientes

131-13-93-13114

15. This figure argued that the three main tasks in one's life are sexual, associational, and occupational. This author of *What Life Should Mean to You* was a founder of the Society of Free Psychoanalysis. A 1917 book by this man examined attempts to compensate for physical disabilities. This author of *The Neurotic Constitution* developed the concept of individual psychology. For 10 points, name this psychologist known for his research into the sense of inferiority.

ANSWER: Alfred **Adler**

030-13-93-13115



1A. Name the computer hardware invented by Douglas Engelbart, which he originally called an "X-Y Position Indicator for a Display System."

ANSWER: mouse

1B. Name the crusade in which the battles of Arsuf and Jaffa were fought between forces led by Richard I of England and Saladin.

ANSWER: Third Crusade

2A. Name the US city which overlooks the Puget Sound and is home to the Pike Place Market, where the original Starbucks is located.

ANSWER: Seattle

2B. What word is used to describe the bleak futuristic societies depicted in such novels as *Nineteen Eighty-Four* and *Brave New World*?

ANSWER: dystopian

3A. What novel written by William Thackeray features the anti-heroine Becky Sharp and the good-natured Amelia Sedley?

ANSWER: Vanity Fair

3B. What Nazi official organized the logistical aspects of the Holocaust, was captured by Israeli agents in Argentina, and was executed in Jerusalem following a 1961 trial?

ANSWER: Karl Adolf Eichmann

4A. What Scottish biologist accidentally discovered both the enzyme lysozyme and a mold which produced the antibiotic penicillin?

ANSWER: Sir Alexander Fleming

4B. Which Goethe character is a scholar who fathers Euphorion with Helen of Troy after seducing Gretchen and encounters Mephistopheles as a poodle?

ANSWER: Faust

5A. What vice chair of the Federal Reserve was appointed by President Obama in October 2013 to succeed Ben Bernanke as chair of the Fed?

ANSWER: Janet Yellen

5B. What is the most populous country in the world whose primary language is Portuguese?

ANSWER: Brazil

6A. This is a 20-second calculation question. Segment BC is a diameter of circle O and A is a point on the circumference of O. If the ratio of the measure of angle ABC to that of angle ACB is 2, what is the measure of angle ABC?

ANSWER: 60 degrees [or pi over 3 radians]

6B. This is a 20-second calculation question. If the base y logarithm of 64 equals $\frac{3}{2}$, what is y?

ANSWER: 16

7A. What geologic period is named for a mountain range on the French-Swiss border, was dominated by sauropods, and came after the Triassic?

ANSWER: Jurassic period

7B. “The Lives of the Dead” is one of the stories from what collection by Tim O’Brien about a group of American soldiers in Vietnam?

ANSWER: *The **Things They Carried***

8A. What university lost four students to gunfire from the Ohio National Guard during a 1970 campus protest of the Vietnam War?

ANSWER: **Kent State** University

8B. What 1909 experiment disproved J.J. Thomson's plum pudding model and led to the discovery of the nucleus?

ANSWER: Rutherford's **gold foil** experiment [or **Geiger-Marsden** experiment; prompt on partial answers]

9A. This is a 30-second calculation question. In the first quadrant, what is the minimum value of the function tangent of x plus cotangent of x?

ANSWER: **2**

9B. This is a 30-second calculation question. If event A has a 50% probability of happening, and event B has a 60% probability of happening. If the events are not independent, what is the smallest possible probability of both happening?

ANSWER: **10%** [or **1/10**]

10A. In October 2013 elections, what country’s FPV-PJ coalition won both legislative houses using a platform based on the policies of President Christina Kirchner?

ANSWER: **Argentina** [or **Argentine Republic**; or Republica **Argentina**]

10B. Robert Capa's photograph series *The Magnificent Eleven* and Joe Rosenthal's picture of Marines raising the flag were taken during what war?

ANSWER: **World War II**



1. This man's "Ancient Valor is Not Yet Dead in Italic Hearts" was used by Machiavelli to end *The Prince*. He wrote about his lover dying without suffering and revealing that she always loved him in his "Triumph of Death." This man wrote an epic poem about the Second Punic War entitled *Africa*. He wrote a book about Roman heroes called *De Viris Illustribus*, and he also wrote the *Canzoniere*. For 10 points, name this Italian poet who is the namesake of a type of sonnet and is known for his poems addressed to Laura.

ANSWER: Francesco Petrarcha

030-13-93-13117

2. The stress-energy tensor is the source of this interaction, and it is the weakest of the four fundamental forces. The strength of this force between two bodies is inversely proportional to the square of the distance between them and is described using a "universal constant." On Earth, it causes objects to accelerate downwards at 9.8 meters per second squared. For 10 points, identify this force studied by Isaac Newton, possibly because of an apple falling on his head.

ANSWER: gravity

226-13-93-13118

3. This character compares the interim between "the acting of a dreadful thing" and "the first motion" to "a phantasma" in a speech that partly inspired Eliot's "The Hollow Men." This man cries, "Peace! Count the clock" after one anachronistically chimes during a meeting at his house. This character is told that "the fault...is not in our stars, but in ourselves." Antony proclaims him the "noblest Roman of them all" after his defeat at Philippi. For 10 points, name this Shakespeare character who joins with Cassius to assassinate Julius Caesar.

ANSWER: Marcus Junius Brutus

080-13-93-13119

4. Ella Fitzgerald met her second husband while on tour with this man's band. This musician had to leave Cab Calloway's band after attacking him with a switchblade. Chano Pozo played the drums on some of his Afro-Cuban pieces, like "Manteca." He composed such jazz standards as "Groovin' High" and "Salt Peanuts." This composer of "A Night in Tunisia" helped establish bebop along with Charlie Parker. He was known for his glasses and puffed-up cheeks. For 10 points, name this jazz musician most famous for his bent trumpet.

ANSWER: John Birks "Dizzy" Gillespie

080-13-93-13120

5. This country is the home of Zorbing. Emirates sponsored its team in an event in which they lost the last eight races to a team sponsored by Oracle; that event was America's Cup, which they lost to Team USA. It is the current holder of the World Cups for rugby league and rugby union. For 10 points, name this country, home to the All Blacks, who perform a *haka* based on a war chant used by the Maori.

ANSWER: New Zealand [or Aotearoa]

153-13-93-13121

6. This instrument was used in jazz by Stephane Grapelli and Stuff Smith. Gustav Holst wrote a double concerto for this instrument for Jelly d'Aranyi and her sister Adila Fachiri. In the nineteenth century, leading players of this instrument included Johannes Brahms's collaborator Joseph Joachim and the virtuoso Niccolò Paganini. For 10 points, name this instrument which Yehudi Menuhin and Itzhak Perlman also play using a shoulder rest and a bow, which is higher pitched than the cello and viola.

ANSWER: violin

019-13-93-13122

7. It's not Jude, Hebrews, or Revelation, but Martin Luther attempted to remove this book from canon, believing it contradicted the beliefs of sola gratia (GRAH-tee-uh) and sola fide (FEE-day). This book's second chapter contains the line, "faith without works is dead." This book also contains the guidelines for the anointing of the sick. For ten points, name this New Testament book, believed to have been written by a half-brother of Jesus.

ANSWER: Epistle of James

225-13-93-13123

8. This constant is the basis for derivation of the Johnson-Nyquist noise. It's not the ideal gas constant, but the product of this constant and temperature is divided by Planck's constant in the Eyring equation. For a gas, the average kinetic energy is three-halves times temperature times this constant. In an equation on its namesake's tombstone, this quantity multiplies the logarithm of the microcanonical partition function to give entropy. For 10 points, name this constant equal to the ideal gas constant over Avogadro's number, denoted " k_B ."

ANSWER: Boltzmann's constant [prompt on 1.38 times ten to the power of negative 23]

189-13-93-13124

9. In 1843, Georg Carstensen started the amusement park found in this city called Tivoli Gardens. This city, the largest on the island of Zealand, is home to the "free town" Christiania. The Øresund Bridge connects this city to Malmö. Edvard Eriksen created a sculpture in this city's harbor of a woman seated on a rock. For 10 points, name this Scandinavian capital city that is connected by a bridge to Sweden, and whose statue of *The Little Mermaid* was inspired by Hans Christian Andersen.

ANSWER: Copenhagen [or København]

023-13-93-13125

10. An alanine for valine point mutation in a copper/zinc superoxide dismutase called SOD1 has been implicated in causing this disease. The only FDA-approved drug to treat this condition is Riluzole. About a quarter of cases of this disease are classified as bulbar onset, while the rest involve limb onset, usually presenting as numbness in arms and legs. Both upper and lower motor neurons are destroyed in this disease. For 10 points, name this degenerative motor disorder also known as amyotrophic lateral sclerosis, though it's usually named for a baseball player.

ANSWER: Lou Gehrig's disease [or amyotrophic lateral sclerosis or ALS before it is read; or motor neuron disease or MND]

190-13-93-13126

11. In this game, Valdrif Lucky Dagger has a 25% critical chance and the Rueful Axe is the only weapon that can harm the dog Barbas. Its player negotiates a peace treaty so that Odahviing can be captured in the fortress Dragonsreach. A call from High Hrothgar summons this game's player after a victory near Whiterun. For 10 points, name this Bethesda game in which Alduin is defeated by the Dragonborn, the latest in the Elder Scrolls series.

ANSWER: *The Elder Scrolls V: Skyrim* [or *The Elder Scrolls V: Skyrim*; do not accept or prompt on "The Elder Scrolls" alone]

198-13-93-13127

12. This phenomenon distinguishes monosaccharides as either ring or straight chain in the body. Ketones and enols exist in equilibrium due to a form of this phenomenon known as tautomerization. Stereochemistry deals with the spatial form of this phenomenon, which applies to the D- and L- form of sugars and the E and Z forms of alkenes. This phenomenon differentiates pentane into n-pentane, neopentane, and isopentane. For 10 points, identify this term most commonly defined as compounds which have the same formula, but different structures.

ANSWER: **isomerism** [or **isomerization**, or **tautomerization**, or stereo**isomers**; or word forms]

239-13-93-13128

13. In an attempt to alleviate this crisis, the U.S. provided unground cornmeal, which became known as "Peel's brimstone." This crisis was aggravated by the election which brought John Russell to power, causing the rollback of relief measures. This event was caused by the arrival of the *Phytophthora infestans* mold, which caused a blight affecting a plant originally imported from the Andes. For 10 points, identify this 1840s crop failure which decimated Ireland.

ANSWER: Irish **Potato Famine**

019-13-93-13129

14. A sonnet by this poet describes how London wears "the beauty of the morning" like a garment and concludes by describing a "mighty heart" lying still. This author of a sonnet composed "Upon Westminster Bridge" also described how natural images "Flash upon that inward eye / which is the bliss of solitude." His most famous poems include one about daffodils, "I Wandered Lonely as a Cloud," and another about revisiting a site on the Wye, "Tintern Abbey." For 10 points, name this Romantic poet who collaborated with Samuel Taylor Coleridge on *Lyrical Ballads*.

ANSWER: William **Wordsworth**

080-13-93-13130

15. This man was the president of the U.S. Olympic Committee in the 1928 Summer Olympics, and he sent troops to break up the Bonus Army. This man gave the "Old Soldiers Never Die" speech after being relieved of one post, and he stated "I shall return," after evacuating the Philippines in World War II. For 10 points, name this man who oversaw the Southwest Pacific Theater in World War II and was dismissed as commander of UN forces in the Korean War after clashing with President Truman.

ANSWER: Douglas **Macarthur**

030-13-93-13131



1. This poet wrote “I began to talk like a Jew, I think I may well be a Jew” in a poem which describes the title character as having a “neat mustache” and an “Aryan eye.” She created a woman who struggles with depression and undergoes electroshock therapy; that character is named Esther Greenwood. The first wife of Ted Hughes, this poet killed herself in 1963. For 10 points, name this female author of such poems as “Daddy” and the novel *The Bell Jar*.

ANSWER: Sylvia Plath

052-13-93-13132

2. The heaviest element of this group was discovered when actinium-227 emitted an alpha particle. Solvated electrons turn ammonia blue when elements in this group are dissolved in the solution. An element in this group was used in the first accurate atomic clock. This family of metals violently react with water to produce hydrogen gas. For 10 points, name the family of elements which occupy the first column of the periodic table, which include potassium and sodium.

ANSWER: alkali metals [do not accept “alkaline earth metals”]

239-13-93-13133

3. A drunk character in this play jumps up on a table and calls himself "Flaming Spear," giving a speech while his sister repeatedly shouts "Ocomogosiay!" At a climactic point in this play, Walter declares, "We don't want your money" to send off Mr. Lindner. A subplot in this play concerns how Beneatha will respond to a marriage proposal from the Nigerian Joseph Asagai. In this play, Mama decides to use the \$10,000 from her husband's life insurance to buy a new house in Clybourne Park. For 10 points, name this play about the Younger family by Lorraine Hansberry.

ANSWER: A Raisin in the Sun

080-13-93-13134

4. The standard used in this technique is called a ladder. SDS-PAGE is used on proteins before they undergo this process to give them a negative charge. This technique is the first step of doing a Southern blot. Ethidium bromide, an intercalating agent, is added in this technique. The distance travelled by each fragment in this technique is inversely related to the length, in base pairs, because the long fragments get trapped in the agarose. For 10 points, name this technique in which an electric potential forces DNA through a gel.

ANSWER: gel electrophoresis

190-13-93-13135

5. This is the ethnicity of a woman who hears about her rebellious aunt, the No-Name Woman, from her mother, Brave Orchid. This ethnicity of the author of *The Woman Warrior*, Maxine Kingston, is also that of Pearl Louie Brandt, who buys a figurine of the title goddess in *The Kitchen God's Wife*. The author of *Saving Fish from Drowning*, who belongs to this minority, wrote a series of sixteen vignettes about immigrants in San Francisco who meet up to play board games. For 10 points, name this ethnic minority chronicled in Amy Tan's *The Joy Luck Club*.

ANSWER: Chinese-Americans [prompt on Asian-Americans; or Han Chinese]

080-13-93-13136

Dream of the Red Chamber and *Outlaws of the Marsh* are two of the “Four Great Classical Novels” from what country?

ANSWER: China [or Zhong Guo]

This is a calculation question. Find and simplify the product of the quantity " $x + y$ " and the quantity " $x - 2y + 3$."

ANSWER: $x^2 - 2y^2 - xy + 3x + 3y$ [or answers containing all of **plus x squared**, **minus 2 y squared**, **minus x y**, **plus 3x**, and **plus 3y** in any order]