Tournament 16
Round 10

1. Niven's Theorem concerns the values taken by this function on certain rational inputs. This function is used to represent the imaginary part of a complex number when converting to polar coordinates and is denoted with the hyperbolic function $e$ to the $x$ minus $e$ to the negative $x$ divided by two. The Taylor series for this function is equal to zero when $x$ equals zero and the inverse of this function is the $\mathbf{~}^{*}$ ) cosecant function. For 10 points, name this function which for an angle alpha of a triangle is equal to the ratio of opposite over hypotenuse.
ANSWER: sine function
064-10-23-10102
2. In one play by this author, a man signs onto the ship Londonderry after leaving the Simeon Winthrop and saving Mat Burke from a shipwreck. That play, about an old sailor's reaction to his estranged daughter's sexual life, mirrors this author's own relationship with his daughter Oona, who married Charlie Chaplin. This playwright of Anna (*) Christie also wrote about Harry Hope's bar in The Iceman Cometh and about the tubercular Edmund and morphine-addicted Mary Tyrone. For 10 points, name this author of Long Day's Journey Into Night.
ANSWER: Eugene Gladstone O’Neill
019-10-23-10103
3. This concept has three dimensions according to a work of Hans Eysenck (EYE-senk). It is judged according to clinical, validity, content, and PSY-5 scales by a University of Minnesota test. The Keirsay Sorter and the Myers-Briggs Indicator measure this concept, which is linked to heart disease by the Type A and Type B theory of it. Other types include (*) introverted and extroverted. Those with schizophrenia may have multiple ones. For 10 points, give this term for the distinctive characteristics of a person commonly tested by taking questionnaires.
ANSWER: personality [or personalities]
4. One way to cause this process uses a gas and ion dump to neutralize ions, a technique called neutral beam injection. The Coulomb barrier must be overcome for it to occur. A commonly used apparatus to study this phenomena is a tokamak ('TOE'-kuh-mack'"). Natural ways to do it include CNO and the (*) proton-proton chain, which produces helium. In the late 1980's and early 1990's controversial reports claimed to have developed a "cold" version of this process. For 10 points, name this process where atomic nuclei combine.
ANSWER: nuclear fusion [prompt on heating before "Lawson"]
001-10-23-10105
5. This region experiences a type of fog that is known as camanchaca. The main river that passes through this area is the Loa River. This region is bound on the west by the Cordillera de la (*) Costa and on the east by the Cordillera Domeyko. For 10 points, name this location often considered to be the driest on the Earth, which runs alongside the Andes Mountains and is a desert located in northern Chile. ANSWER: Atacama Desert [or Desierto de Atacama]
6. This item was the subject of a letter that read 'I will keep quiet about this and so will you," which was written shortly after its loss at the "Yellow House." The place where it should be is obscured, and appears above a blue or green overcoat with only one button fastened, in a subsequent self-portrait. It may have been removed with a sword by an angry Paul (*) Gauguin, or cut off with a razor in order to provide a gift to a prostitute named Rachel. For 10 points, name this amputated body part of the Dutch painter of Starry Night.
ANSWER: Vincent van Gogh's ear [or obvious equivalents; prompt on answers such as "an ear" that do not include "van Gogh"; accept either right ear or left ear if specified, as it was his left ear that was removed but the right ear that is bandaged over in the painting]

019-10-23-10107
7. His falling-out with Baron de Coots was due to a religious dispute, in which he opposed the looting of churches and the new "cult of reason" in favor of his own religion of "the Supreme Being." Though he retained popular support after defending the crowds that perpetrated the September Massacres, he, along with his ally Louis de Saint-Just, became a target of the (*) Thermidorean Reaction. For 10 points, name this Jacobin leader of the Committee of Public Safety, who was guillotined after instituting the radical "Reign of Terror" in Revolutionary France.
ANSWER: Maximilien François Marie Isidore de Robespierre
019-10-23-10108
8. In one incident in this book, Coriantumr (kuh-RYE-an-toom-urr) decapitates Shiz, who continues to stand up and struggle for breath for several moments afterwards. Other episodes in this text include the emigration of the "brother of Jared" and the war between the Nephites and the Lamanites. The same organization that follows this text believes that in 1830, a man used a pair of glasses, called Urim and Thummim, to decode this work from ${ }^{(*)}$ gold plates buried in the ground. For 10 points, identify this central book of a Christian denomination founded by Joseph Smith. ANSWER: The Book of Mormon
9. This man discussed language chained by "dull rhymes" and "bound with garlands of her own" in his poem "On the Sonnet." This man also wrote a poem about a superstition in which young maidens "supperless to bed ... must retire." In that poem, Angela allows Porphyro to visit Madeline on the title night, the Eve of St. Agnes. In one of his poems, the title object has the ability to "tease us out of thought," and that poem concludes that (*) "Beauty is Truth, Truth Beauty." For 10 points, name this British poet of "Ode on a Grecian Urn."
ANSWER: John Keats
030-10-23-10110
10. One American group that performed this action met defeat at Ridgeway in an attempt to support Irish independence claims against Great Britain; that was the Fenians. Another instance of this action led to Henry Dearborn's burning of York and to the Battle of (*) Lundy's Lane. That example of this action was encouraged by Felix Grundy, Henry Clay, and other "War Hawks" in Congress. For 10 points, a campaign during the War of 1812 to add land to the United States involved what international provocation, in which American troops fought near Niagara Falls and Toronto?
ANSWER: invading Canada [or obvious equivalents]
11. One section of this text studies the transformation problem, the problem of the relationship between value and market prices. Another section of this text introduces the idea of "commodity fetishism." This work argues that people experience alienation when they do not own the product of their work. This text argues that industry creates $\left.\mathbf{(}^{*}\right)$ profit by forcing workers to perform surplus labor, a theory called the "labor theory of value." For 10 points, name this economic text in three volumes, written by Friedrich Engels and Karl Marx.
ANSWER: Das Kapital [or Capital]
12. This man's biggest defeat occurred days after his enemies arrived just in time to prevent Sangiban from turning traitor and opening the gates of Orlans to him. In that battle, this man allied himself with Walamir and was opposed by Theodoric and Flavius Aetius. After the Battle of (*) Chalons, this leader was convinced to retreat after meeting at Mantua with Pope Leo I. On the night of his wedding to Ildico, he died of a nosebleed. For 10 points, name this "Scourge of God" and leader of the Huns.
ANSWER: Attila the Hun
13. When put in the momentum equation, this quantity is represented mathematically as two times capital omega cross $v$. When the Rossby number equals one, the net acceleration is due to this quantity, as gravitational and centripetal accelerations cancel. The Beta Effect describes the variation in this quantity with $\left(^{*}\right)$ latitude, such that it is zero at the equator and a maximum at the poles. For 10 points, name this weak force caused by the rotation of the Earth, which contrary to myth does not actually make toilets flush in different directions in different hemispheres.
ANSWER: Coriolis force [or Coriolis effect]
003-10-23-10114
14. One actress with this surname voiced the farm girl Mary on The Simpsons episode "Apocalypse Cow." That same actress also starred as the sorceress DG in a miniseries based on The Wizard of $O z$, Tin Man. Another actress with this surname stars on a show that features such characters as the entomologist Jack Hodgins and the FBI agent Seeley (*) Booth, who is partnered with the forensic anthropologist Temperance Brennan. For 10 points, give this surname shared by Emily, who stars on Bones , and her sister, the co-star of the film (500) Days of Summer, Zooey.
ANSWER: Deschanel ("day"-shah-NEL) [accept Zooey Claire Deschanel; accept Emily Erin Deschanel]
15. In this nation's Dawson's Field, the PFLP destroyed three hijacked airliners. Hundreds of thousands of refugees of this nation were expelled from Kuwait in First Gulf War due to this nation's support of Iraq in that conflict. The king of this nation served as a mediator between Israel and the PLO during the 1998 Wye Plantation accords. This nation declared (*) martial law in 1970 and had a civil war that year known as Black September. For 10 points, name this Middle Eastern nation once led by King Hussein.
ANSWER: The Hashemite Kingdom of Jordan [or Al Mamlakah al Urduniyah al Hashimiyah]
16. One work of this type was written by James Woodforde over a span of forty-five years. Four volumes of Lewis Carroll's work of this type are missing. A work of this type by Virginia Woolf was published in five volumes and written between 1915 and 1941. One work of this type describes the Great Plague and the Great (*) Fire of London and contains the refrain "And so to bed." For 10 points, name these personal journals, one of which was written by Samuel Pepys (PEEPS).
ANSWER: diary
024-10-23-10117
17. This composer often had his friend Ricardo Viñes debut his works as a soloist. He was inspired by a Liszt composition set at the Villa d'Este to musically depict water in one piano piece, and dedicated each movement of another piano piece to two friends who had died in World War I. This composer of Jeux d'eau and The Tombeau of Couperin included trombone glissandos at the end of another work, which used a constant snare $\left(^{*}\right)$ drum ostinato and originated as a ballet. For 10 points, name this French composer of the repetitive Bolero.
ANSWER: Joseph-Maurice Ravel
026-10-23-10118
18. This protein produced during cornification contains several dimers which form a single protofilament, which then form higher level protofibrils, microfibrils, and macrofibrils. The alpha form of this protein contains a repeating seven unit pattern which forms a structure called a coiled coil. That form is classified by the number of disulfide bridges it contains, which can be curled by application of an oxidizing agent as performed during a ${ }^{(*)}$ perm. For 10 points, name this hard protein found in claws and fingernails.
ANSWER: keratin
19. This architect claimed that glass and light were "two forms of the same thing." The Smith House and Hyde House were the only two built examples of this man's "American System-Built Houses", and he included "carports" in a series of dwellings which anticipated the suburban ranch-style house, his Usonian designs. He used long overhangs and Roman bricks in the Robie House, an example of his $\mathbf{~}^{*}$ ) Prairie Style. For Edgar Kaufman he built a house cantilevered over the Bear Run River. For 10 points, name this American architect who designed Fallingwater.
ANSWER: Frank Lloyd Wright
20. In one short story by this author, an engineer named Hermann tries to learn a gambling secret from the Count of St. Germain. He wrote a poem about a statue which muses about striking terror into the Swedes and he wrote a drama about a ruler whose reign saw the end of the Time of Troubles. In addition to 'The Bronze Horseman" and Boris (*) Godunov, this author wrote a work in which the title character dances with Olga and later kills his friend Vladimir Lensky in a duel. For 10 points, name this Russian author of Eugene Onegin.
ANSWER: Alexander Pushkin
21. One character in this opera accompanies himself on the mandolin in the aria "Deh, vieni alla finestra." A peasant girl repeats the phrase, "Toccami qua!" during the aria 'Vedrai, carino," which is addressed to her fiancé Masetto. In this opera, Leporello distracts Elvira by singing the "Catalogue Aria," in which he states that his master has slept with two thousand sixty-five women. At the end of this opera, the Commendatore returns as a (*) stone statue to drag the title character to Hell. For 10 points, name this Mozart opera about a legendary seducer.
ANSWER: Don Giovanni [or The Rake Punished, or Don Giovanni; or Il dissoluto punito, ossia Il Don Giovanni]

003-10-23-10122
22. One leader of this religion was responsible for the building of the Harimandir, the holiest of this religion's gurdwaras. Another leader of this religion set up a community of initiates within the religion known as Khalsa. Members of that group in this religion must wear long hair, a comb, and dagger as part of the five K's. This religion's leaders have included (*) Nanak and Gobind Singh, who were two of the ten human gurus. For 10 points, name this Indian religion whose scripture is the Adi Granth and whose Golden Temple is found in Amritsar.
ANSWER: Sikhism
23. The results of this experimentwere confirmed by the Trouton-Noble experiment. One participant in this experiment continued to work with Dayton Miller in an attempt to achieve a different result, while the result in this experiment was a failure to detect any significant fringe shift after light passed through an $\left({ }^{*}\right)$ interferometer. Such a shift would have provided evidence for a medium in which light travels, a theory which was therefore debunked by this experiment. For 10 points, name this experiment that disproved the existence of the luminiferous aether.
ANSWER: Michelson-Morley experiment

1. One of the causes of the second of these wars was the imprisonment of sailors from the Arrow. For 10 points each:
[10] Name these wars which took place between the British and the Chinese in the 19th century. The wars are named for a narcotic derived from poppies.
ANSWER: Opium Wars
[10]The first Opium War was concluded by this treaty. It gave Hong Kong to the British.
ANSWER: Treaty of Nanjing [or Treaty of Nanking]
[10] The Treaty of Nanking ended a system under which British merchants could only trade at this Chinese city near Hong Kong. It is the namesake of a widely spoken regional language.
ANSWER: Guangzhou [or Canton]
001-10-23-10201
2. Examples of these molecules include amylase and pepsin. For 10 points each:
[10] Name these proteins that can catalyze chemical reactions.
ANSWER: enzymes
[10] The induced fit model is a modification a model proposed by Emil Fischer, which states that a substrate fits into an enzyme much like the relationship between these two objects.
ANSWER: lock and key model
[10] The lock-and-key model was verified with the discovery of the structure of this enzyme, which is found in tears and saliva and breaks down bacterial cell walls.
ANSWER: lysozyme
3. During a mass in 1478 , several members of this family were attacked at the Florence Cathedral in the Pazzi Conspiracy. For 10 points each:
[10] Name this family of rulers of Florence, which included Lorenzo the Magnificent.
ANSWER: Medici family [or Medicis]
[10] In the 1490s, this puritanical preacher tried to expel the Medicis from Florence, while also waging a war of letters with Pope Alexander VI. He encouraged citizens to burn luxury goods in the "bonfire of the vanities."
ANSWER: Girolamo Savonarola
[10] This member of the Medici family ruled all of Tuscany in the mid sixteenth century. A patron of Pontormo, Vasari, and Michelangelo, he had the Uffizi palace built.
ANSWER: Cosimo de Medici [or Cosimo I; or Cosimo the Great; or Cosimo il Grande]
4. This "experiment in literary investigation" traced the creation and operation of the namesake Siberian prison camps through the eyes of a zek, or prisoner. For 10 points each:
[10] Name this work by Alexander Solzhenitsyn.
ANSWER: The Gulag Archipelago [or Archipelag Gulag]
[10] In this Mikhail Bulgakov satire, the Devil visits the USSR with his cat Behemoth, while one of the title characters is writing a novel about Pontius Pilate.
ANSWER: The Master and Margarita
[10] Both The Gulag Archipelago and The Master and Margarita were first circulated in the USSR through this underground practice of self-publishing among dissidents.
ANSWER: samizdat
082-10-23-10204
5. This property allows water striders to walk on water. For 10 points each:
[10] Name this property which is caused by the cohesion of molecules of liquids.
ANSWER: surface tension
[10] This doubly-eponymous set of equations is used to model surface tension and other phenomena involving the motion of fluids.
ANSWER: Navier-Stokes equations
[10] In this type of fluid, the viscosity is a function of temperature and pressure, and does not depend on the forces acting on the fluid.
ANSWER: Newtonian fluid
024-10-23-10205
6. This country has a capital at Antananarivo. For 10 points each:
[10] Name this large island nation in the Indian ocean that is home to lemurs.
ANSWER: Republic of Madagascar
[10] Madagascar is separated from Africa by this channel which also names the nation on the other side of the channel.
ANSWER: Mozambique Channel
[10] This other island nation near Madagascar has a capital at Port Louis. It was once home to the dodo bird.
ANSWER: Republic of Mauritius
001-10-23-10206
7. This deity remained in the underworld after the frost giant Thokk refused to mourn his death. For 10 points each:
[10] Name this god killed by mistletoe that was inadvertently thrown by Hodr.
ANSWER: Balder
[10] Balder's death was arranged by this Norse trickster god who learned that Balder was vulnerable to mistletoe.
ANSWER: Loki
[10] Loki had learned of Balder's weakness while in the hall of this deity, Balder's mother and Odin's wife.
ANSWER: Frigga
8. The count of Tallard and Maximilan of Bavaria were the losing commanders at this war's Battle of Blenheim, the first time a French army had lost a full battle in fifty years. For 10 points each:
[10] Name this 1701 to 1714 European war, in which a coalition led by Britain's Duke of Marlborough and Austria's Eugene of Savoy secured victory.
ANSWER: War of the Spanish Succession
[10] The immediate cause of the War of the Spanish Succession was an attempt to put a member of this royal house on the Spanish throne. This dynasty had been in power in France since 1589.
ANSWER: House of Bourbon
[10] This French Sun King engineered the plan to make his grandson King of Spain. His seventy-two-year reign ended during the war.
ANSWER: Louis XIV of France [or Louis the Great; or Louis the Grand Monarch; or Louis le Grand; or Louis le Grand Monarque; prompt on Louis]

019-10-23-10208
9. This locale is the subject of a poem that begins "flood-tide below me! I watch you face to face." For 10 points each:
[10] Name this New York borough whose "Ferry" is the subject of a Walt Whitman poem.
ANSWER: Brooklyn
[10] The Brooklyn Bridge is the subject of the modernist epic "The Bridge," which was written by this American poet.
ANSWER: Harold Harte Crane
[10] This Beat Poet wrote "Brooklyn Bridge Blues" but is better known for composing a novel, On the Road.
ANSWER: Jean-Louis "Jack" Kerouac
10. This opera begins with Tonio alerting the audience that the performance they are about to see is about real people. For 10 points each:
[10] Name this opera by Ruggero Leoncavallo which sees Canio sing the aria "Vesti la giubba" and ends with him stabbing Silvio and his wife Nedda.
ANSWER: I Pagliacci [or The Clowns; or The Players]
[10] Since the opera's premiere in 1892, the role of Canio has been played by many tenors, including this man. One of The Three Tenors, this successful singer died in 2007.
ANSWER: Luciano Pavarotti
[10] Pagliacci is often performed on a double bill with this composer's opera Cavalleria rusticana, or Rustic Chivalry
ANSWER: Pietro Antonio Stefano Mascagni
11. In his poem "Strange Meeting," an enemy killed by the speaker implores, "Let us sleep now..." For 10 points each:
[10] Name this British poet who asked, "What passing bells for these who die as cattle?" in "Anthem for Doomed Youth."
ANSWER: Wilfred Owen
[10] Owen wrote "Dulce Et Decorum Est" about a mustard gas attack in the trenches of this massive war, which produced ambulance-drivers-turned-authors such as Ernest Hemingway.
ANSWER: World War I [or WWI; or First World War; or the Great War]
[10] World War I also saw fighting from this friend of Owen who wrote Memoirs of a Fox-Hunting Man. ANSWER: Siegfried Sassoon

079-10-23-10211
12. This series begins with "The Savage State" and ends with "Desolation." For 10 points each:
[10] Name this Thomas Cole series which depicts a landscape changing from wild and pastoral to an epic city to eventual chaotic destruction.
ANSWER: The Course of Empire
[10] Thomas Cole was a member of this early nineteenth century school of American painting. Also consisting of Frederic Church and Albert Bierstadt, this romantic school takes its name from a body of water.
ANSWER: Hudson River School
[10] This other Hudson River painter honored the recently deceased Cole by depicting him and poet William Cullen Bryant in the Catskills in the painting Kindred Spirits.
ANSWER: Asher Durand
13. The "Little Giant," Stephen A. Douglas, defeated this man in an Illinois state senate race in 1858. For 10 points each:
[10] Name this man who went on to defeat Douglas in the 1860 Presidential election. As President, he led the U.S. through the Civil War.
ANSWER: Abraham Lincoln
[10] Lincoln easily won the Presidency in 1860 because the Democratic Party split into north and south factions, nominating Douglas and this then-Vice President, respectively.
ANSWER: John Cabell Breckinridge
[10] Breckinridge found favor in the South because he backed slavery in this territory after Douglas designed an act named for it and Nebraska that allowed it to vote on the slavery question.
ANSWER: Kansas
14. This poet claimed that "nothing now can ever come to any good" in his poem "Funeral Blues." For 10 points each:
[10] Name this British poet and longtime lover of Christopher Isherwood who wrote "September 1, 1939" about the beginning of World War II.
ANSWER: W. H. Auden [or Wystan Hugh Auden]
[10] Auden wrote his poem "Musee des Beaux Arts" about a painting by Pieter Bruegel the Elder that depicts a landscape "with the fall of" this son of Daedalus from Greek myth.
ANSWER: Icarus
[10] Auden wrote about one of these creatures "beneath the skin" in a collaboration with Isherwood. Flush is a novel by Virginia Woolf about Elizabeth Barrett Browning's pet of this type.
ANSWER: a dog
026-10-23-10214
15. Name these minerals that appear on the Mohs scale of hardness, for 10 points each.
[10] The most scratchable of all minerals on the Mohs scale is this mineral with a hardness of one.
ANSWER: talc
[10] This mineral, similar to talc, registers a two. Its main commercial use is in drywall.
ANSWER: gypsum
[10] Checking in at a value of five on the Mohs scale is this phosphate mineral that is found in tooth enamel.
ANSWER: apatite
026-10-23-10215
16. Composers often write pieces that feature solo pianists. For 10 points each:
[10] Such a piece is called a concerto if it features a solo piano and orchestra. Pieces in this genre feature an unaccompanied solo piano and typically consist of an exposition, a development, and a recapitulation.
ANSWER: piano sonata
[10] This C-sharp minor Beethoven piano sonata is officially subtitled "Quasi una fantasia," but its informal nickname derives from Ludwig Rellstab's comparison to nighttime on Lake Lucerne.
ANSWER: the "Moonlight" Sonata [or Piano Sonata Number 14 in C-sharp minor]
[10] A "Wuerttemberg" and "Prussian" piano sonata were composed by Carl Philipp Emanuel, a member of this musical family that also includes Johann Christoph.
ANSWER: the Bach family
026-10-23-10216
17. Among this game's expansion sets include the first, The Burning Crusade, and the most recent, Cataclysm, which was released in December of 2010. For 10 points each:
[10] Name this popular MMORPG where players go on quests as trolls, goblins, dwarfs, or a variety of other player races.
ANSWER: World of Warcraft [do not prompt on "Warcraft"]
[10] Like all the other games in the Warcraft series, World of Warcraft takes place in this fictional world which is comprised of three continents and the Great Sea.
ANSWER: Azeroth
[10] These creatures are the main villains in the first two Warcraft games. In the Lord of the Rings universe, this race's Uruk-hai faction serves in Saruman's army.
ANSWER: orcs
18. Name these letters for Paul of Tarsus for 10 points each:
[10] This longest of the epistles follows the Book of Acts in the Bible. It is addressed to the inhabitants of an Italian city.
ANSWER: Epistle to the Romans
[10] In this letter, Paul remembers that "when I became a man, I put away childish things," and advises that people "abideth faith, hope, love, these three; but the greatest of these is love."
ANSWER: First Corinthians [prompt on "Corinthians"]
[10] This shortest of the epistles advises the title Colossian on how to treat his slave Onesimus. ANSWER: Epistle to Philemon

015-10-23-10218
19. This virus caused a stir when there was an outbreak among captive macaques in Reston, Virginia. For 10 points each:
[10] Name this virus that causes hemorrhagic fever and is named after a river in Zaire.
ANSWER: Ebolavirus
[10] Mosquitoes transmit this virus from birds to humans. It is closely related to Japanese encephalitis and is believed to have arrived in the U.S. around 1999.
ANSWER: West Nile virus
[10] This West African viral disease was first discovered in 1969. The causative Arenavirus's normal reservoir is the multimammate rat.
ANSWER: Lassa fever [or Lassa virus]
001-10-23-10219
20. Until 2001 this group was lead by Muhammad Omar. For 10 points each:
[10] Name this Islamist group that currently operates as an insurgency movement in Afghanistan.
ANSWER: Taliban
[10] Following 9/11, the Taliban was overthrown following a joint operation by U.S. forces and this group founded by Ahmad Massoud.
ANSWER: United Islamic Front or Northern Alliance
[10] Afghanistan's current president Hamid Karzai was elected in one these mass meetings, a Pashtun term meaning "grand assembly".
ANSWER: loya jirga
064-10-23-10220
21. In this story, the spy Yu Tsun reveals a military target to the Germans by killing a professor with the same name as the target. For 10 points each:
[10] Name this story first published in the collection Ficciones.
ANSWER: "The Garden of Forking Paths" [or "El Jardín de senderos que se bifurcan"]
[10] "The Garden of Forking Paths" was written by this blind Argentinian whose other stories include "The Library of Babel" and "Tlon, Uqbar, Orbis Tertius".
ANSWER: Jorge Luis Borges
[10] This Borges story features the title point, which contains within it the entire universe. It is named for the first letter of the Hebrew alphabet.
ANSWER: "The Aleph" [or "El Aleph"]
082-10-23-10221

