LADUE INVITATIONAL SPRING TOURNAMENT 2013

Round 5

TOSS-UPS

1. This figure's possessions Megingjorth and Jarngreipr will be inherited after his death by his sons Modi and Magni. A whetstone remains stuck in his head after his fight with Hrungnir, and he has his weapon stolen by Thrym. That weapon was made by the dwarf Brokkr and has a (*) shortened handle due to Loki's interference. Loki also cut off the golden hair of this god's wife Sif, and this man fails to lift what seems to be a cat at the castle of Utgard-Loki. This figure will walk nine paces after killing his nemesis, the Midgard Serpent. For 10 points, identify this wielder of the hammer Mjolnir and Norse god of thunder.

ANSWER: Thor

<BZ>

2. During this event, Dudley Malone claimed that there could be "no duel with the truth," and he, like Arthur Garfield, was part of this case's defense team. Maynard Metcalf was one of the few allowed to testify in this case, whose beginning was planned by George Rappleyea. During this case, which was fictionalized in *Inherit the Wind* and based on a violation of the (*) Butler Act, the prosecution defended the veracity of the Book of Genesis while being questioned as a witness. For ten points, identify this 1925 Tennessee case in which William Jennings Bryan and Clarence Darrow debated the teaching of evolution in schools.

ANSWER: <u>Scopes</u> Monkey Trial (or *Tennessee v. John Thomas <u>Scopes</u>*) <MS>

3. In one of this author's novels, people drown while trying to cross the Arabian Sea by foot. In another, Boonyi betrays the title character by having an affair with Max Ophuls. This author of Shalimar the Clown wrote a novel which sees Joseph D'Costa's lover Mary Pereira play a trick on Mumtaz, the daughter of (*) Aadam Aziz. In this man's most famous novel, mountaineer Allie Cone is killed by Gibreel Farishta, who, like Saladin Chamcha, had survived a plane explosion over the English Channel. For ten points, identify this author who wrote about Saleem Sinai in Midnight's Children and earned a fatwa for The Satanic Verses.

ANSWER: Salman **Rushdie** <MS>

4. Amborella trichopoda is the oldest surviving example of the "basal" type of these organisms, which are related to magnoliids. One of these organisms' gametes passes through the style before engaging in double fertilization. These organisms produce a structure that contains endosperm and is surrounded by a pericarp. These organisms are divided into (*) monocots and dicots depending on the number of seed leaves they possess. Unlike a related class of organisms, their seeds are contained in a fruit, and their most notable feature contains stamens and pistils. For ten points, name these flowering plants, which are often contrasted with gymnosperms.

ANSWER: <u>angiosperms</u> (or <u>Angiospermae</u>; accept <u>Anthophyta</u> or <u>anthophyte</u>s; prompt on "flowering plants" until mentioned)

 $\langle BZ \rangle$

5. This man often seeks out the prostitutes Scarlett and Giselle, and his father, Edward Teague, is the Keeper of the Code. Sao Feng's maps are used to rescue this man, whose ship is moved through a sea of sand by an army of rock-crabs. Commodore Norrington often pursues this man, who owns a magic compass obtained from Tia Dalma that points to what this character wants most. This man's mate is Mr. (*) Gibbs, and he meets the Brethren Court at Shipwreck Cove. With help from Will Turner and Hector Barbossa, he escapes from Davy Jones' Locker. For ten points, identify this character played by Johnny Depp, the protagonist of the *Pirates of the Caribbean* movies, who insists on being called "Captain".

ANSWER: Captain <u>Jack Sparrow</u> (accept either) <JD>

6. One employee of this organization was expelled from China after the newfound riches of Wen Jiabao's family were revealed, though the Chinese government claims that he lacked required paperwork. Nicholas Kristof and David Brooks both work for this company and *The* (*) *Conscience of a Liberal* is Paul Krugman's blog for it. This organization is currently headed by Arthur Sulzberger, and it recently switched to a paywall-blocked website which only allows the viewing of ten articles a month. For ten points, name this newspaper which relays "all the news that's fit to print." ANSWER: *The New York Times*

 $\langle DA \rangle$

7. One work inspired by this poem mentions the "always coming on / The always rising of the night." This poem's narrator would not mind two hundred years "to adore each breast" and thirty thousand years "for the rest," before noting that "the grave's a fine and private place." This poem's speaker's (*) "vegetable love" would "grow vaster than Empires" if it weren't for the coming "deserts of vast eternity" and "time's winged chariot hurrying near." For ten points, identify this metaphysical poem beginning "Had we but world enough, and time," in which Andrew Marvell tries to get a reluctant woman to sleep with him.

ANSWER: "To His Coy Mistress"

<MS>

8. He's not Bob Dylan, but this man's album In a Silent Way marked the beginning of his "electric" period. He included songs like "Pharaoh's Dance" and "Sanctuary" in his album that defined the jazz-rock fusion movement This musician was known for playing with his back turned to the audience, and the music of Joaquin Rodrigo and Manuel de Falla influenced his (*) Sketches of Spain. After splitting with Charlie Parker, this recorder of Bitches Brew collaborated with pianist Gil Evans on the album, Birth of the Cool, and his best known album includes the songs "Freddie Freeloader" and "So What?" For ten points, name this jazz trumpeter who recorded Kind of Blue.

ANSWER: Miles **Davis** III

<HX>

9. One tool for analyzing these objects is the star-mesh transform, a generalization of the three-node Y-delta technique. Tellegen's Theorem about these objects can be derived from two other rules, and certain simplifications of these entities are guaranteed by Norton's and Thévenin's Theorems. A certain induced quantity for these systems is equal to the derivative of (*) flux with respect to time as it moves through a magnetic field. The LC variety of these contain inductors and capacitors, and junction and loop rules named for Kirchhoff can be applied to them. For ten points, identify these electrical networks that often contain batteries and resistors.

ANSWER: electrical <u>circuits</u> (accept electrical <u>network</u>s before mentioned, prompt on graphs) <MS>

10. This state contains the southern part of the Flaming Gorge Reservoir and the western part of Dinosaur National Monument, and a white-and-pink coiling sculpture jutting out from a lake in this state is *Spiral Jetty*. Hoodoos are found in a national park in this state, whose largest river flows past the city of (*) Moab before receiving the Green River. Its highest point, Kings Peak, is located in this state's Uinta Mountains. The Bonneville Salt Flats can be found in this state, which lies northwest of the Four Corners. Its cities include Ogden and Provo, and it contains Bryce Canyon and Zion National Parks. For ten points, name this state east of Nevada, with capital at Salt Lake City.

ANSWER: <u>Utah</u>

 $\langle JD \rangle$

HALFTIME

11. A rotary vacuum drum can be used to perform this technique, while the crossflow variety of this technique can be used to purify antibodies. Aids used in this process include kieselguhr and perlite, both of which can decrease resistance and obtain a cleaner product. It differs from adsorption as this process depends not on surface charge, but rather on particle size, and it is commonly used in (*) sewage treatment to extract solid wastes from water. For ten points, name this technique which separates mixtures by passing them through a semipermeable membrane and can be performed with a paper and funnel.

ANSWER: **filtration** (accept word forms)

<EnC>

12. One proponent of this philosophy attacked the pseudo-problems of analytic philosophy in *Philosophy and the Mirror of Nature*; that man was Richard Rorty, who developed the "neo" version of it. One philosopher of this movement discouraged "obscure conceptions" in "How to Make Our Ideas Clear," and this movement's most famous text asks if a man ever goes around an unseen (*) squirrel while chasing it around a tree. For ten points, identify this school of thought championed by CS Peirce and William James, which assesses philosophy by its practical applications.

ANSWER: neopragmatism

13. This novel's narrator describes another's parking of cars in an incredibly long sentence, and later "realized what a rat" that character was after being abandoned with dysentery in Mexico. That "Holy goof" impregnates Inez despite his involvement with Marylou and Camille, and this novel's narrator is friends with (*) Old Bull Lee and Remi Boncoeur. This novel's manuscript was written on a giant scroll, and its character Carlo Marx represents Allen Ginsberg. For ten points, name this Beat novel about the cross-country travels of Dean Moriarty and Sal Paradise written by Jack Kerouac. ANSWER: <u>On the Road</u>

<MS>

14. The Battle of Sainte-Foy was fought near a city in this region, which was also the site of the Oka Crisis. One of the Intolerable Acts passed after the Boston Tea Party named after this region expanded it and allowed Catholicism within it. Some tried to get this region to support the Constitution Act of 1982 by rejecting the Meech Lake Accord. Pierre Laporte was murdered during this region's (*) October Crisis, which brought an end to its Quiet Revolution. The colony of l'Habitation ["lahb-it-ash-eeon"] established by Samuel de Champlain was a precursor to this province. The namesake of a political "bloc" pushing for secession is, for ten points, what French-speaking Canadian province home to Montreal?

ANSWER: Quebec

<MS>

15. This artist included spherical trees in the background of a landscape whose left is dominated by a church with an enormous spire in his painting of *The Midnight Ride of Paul Revere*. A red-coated man bends a tree and extends his arm towards a boy with an axe, as seen through a red curtain in this man's (*) *Parson Weems' Fable*, which shows a young George Washington. The edge of a red barn can be seen on the right of this man's best-known work, a portrait of his sister and his bespectacled, pitchfork-wielding dentist. For ten points, name this Iowan artist of *American Gothic*. ANSWER: Grant **Wood**

 $\langle MS \rangle$

16. In one of this man's novels, Gertrud marries Heinrich Muoth instead of the composer Kuhn, while Leo abandons a group of travellers in the Morbio gorge in his *Journey to the East*. The protagonist of another of this author's works befriends Father Jacobus before drowning while swimming with Tito. Another protagonist of his is employed by (*) Kamaswami and loves Kamala, but ultimately reunites with Govinda as an enlightened ferryman, and a different protagonist meets Pablo and Hermine in the Magic Theatre. For ten points, identify this German author of *The Glass Bead Game*, *Siddhartha*, and *Steppenwolf*.

ANSWER: Herman Hesse

<MS>

17. After Spitamenes was killed, this man gained control of Sogdiana and married the Sogdian princess Roxane. He ordered the execution of Parmenio and Parmenio's son Philotas after the latter was accused of plotting to kill him. The satrap Bessus killed this man's enemy after this man's victory at the Battle of (*) Gaugamela. Seleucus I Nicator received the largest portion of this man's empire, which was split among the Diadochi following his death. This man, who repeatedly defeated Darius III, cut the Gordian knot with his sword and rode the horse Bucephalus. For ten points, name this son of Phillip II who conquered the Persian Empire as a Macedonian general.

ANSWER: Alexander the Great (or Alexander III of Macedon)

<SC>

18. The "enhanced" type of this construct in Java executes code for each element of a collection, while the "continue" keyword returns to the start of one of these structures. The complexity of an algorithm consisting of two nested ones is equal to the product of their complexities. An index variable can be incremented to count the number of (*) iterations in one of these structures, and they can be set off by "for" and "while" keywords. For ten points, name these programming control flow structures that execute a block of code until a condition is satisfied, whose infinite type can prevent a program from terminating.

ANSWER: loops (accept specific types of loops, like while or for)

<HX>

19. It's not Yom Kippur, but in one prayer recited on this holiday, the name of a more common occurrence is replaced with this holiday's name following the words "li-had-leek ner shel". The central object of this holiday is supposed to be set up in a window, to draw the attention of passers-by, and that object contains the special (*) shamash. This holiday celebrates the victory of the Maccabees over Antiochus and commemorates the time a single day's worth of oil burned for eight days. This event includes the consumption of fried latkes and the lighting of a special nine-branched menorah. For ten points, name this Jewish holiday, the wintertime Festival of Lights. ANSWER: Chanukah (prompt on "Festival of Lights" before mentioned)

20. The sum of this function applied to each of the three angles of a triangle gives one plus the inradius over circumradius. This function's hyperbolic analogue is equal to e to the x plus e to the negative x all over two, and is the equation for a catenary curve. This function of theta gives the real part of e to the power of i times theta, and the (*) dot product of two unit vectors is equal to this function of the angle between them. For ten points, give this even trigonometric function, which in a right triangle is equal to adjacent over hypotenuse, and whose square is equal to one minus

ANSWER: **cos**ine (accept **cosh** or hyperbolic **cos**ine after that clue is read) <MS>

End of regulation, only proceed if tied

- 21. Immediately prior to the start of this event, Count Emicho and William the Carpenter massacred the Jews in Mainz. Bohemond of Taranto defeated the forces of Kilij Arlsan at one battle in this conflict. This event was preceded by the Council of Piacenza, where Alexius Comnenus asked for aid. One side in this conflict won both the Battle of Dorylaeum and the Siege of (*) Antioch. Walter the Penniless and the Peter the Hermit led the first unofficial campaign of this conflict, which was called for at the Council of Clermont by Pope Urban II. The 1099 capture of Jerusalem ended, for ten points, what first attempt by European Christians to take back the Holy Land? ANSWER: First Crusade (accept Crusade after "first" is mentioned; otherwise prompt on it) <KT>
- 22. A work often paired with this one mentions the title figure's "clothing of delight" and "tender voice" after asking "does thou know who made thee?" This poem's narrator wonders if "stars threw down their spears / and watered heaven with their tears" before asking "did he who made the (*) lamb make thee?" This poem asks "what the hammer? what the chain?" produced the title figure, whose "fearful symmetry" was surely framed by some "immortal eye." For ten points, identify this William Blake poem whose title animal is "burning bright / in the forests of the night." ANSWER: "The Tyger"

<MS>

BONUSES

1. Bonus: After being expelled from Heaven, this poem's antagonist founds Pandaemonium. For ten points each:

[10] Identify this epic poem beginning with a description "of Mans First Disobedience, and the Fruit of" the Forbidden Tree, which also sees Satan lead a failed revolt against God.

ANSWER: Paradise Lost

[10] Paradise Lost was written by this blind British poet who also wrote Il Penseroso and L'Allegro.

ANSWER: John Milton

[10] This Milton play begins just after the title character's eyes have been gouged out and his hair cut after being deceived by the Philistine Dalila.

ANSWER: Samson Agonistes (or Samson the Agonist)

<MS>

2. Bonus: In 2008, an Iraqi journalist threw some of these at George W. Bush. For ten points each:

[10] Name these objects, thousands of which were owned by Imelda Marcos, the wife of a corrupt former Filipino president. Caligula's name came from his habit of wearing one type of these as a child.

ANSWER: shoes (accept boots)

[10] Hyacinthe Rigaud painted a portrait of this French "Sun King" in his large, high-heeled shoes, which were meant to make him look taller and more like an absolutist monarch.

ANSWER: <u>Louis XIV</u> (prompt on just Louis, accept <u>Louis the Great</u>)

[10] Nikita Khrushchev had a notable shoe-banging incident at a UN meeting. Not long before, this speech of his was given to the leadership of the Communist Party and denounced the deceased Stalin's personality cult.

ANSWER: The Secret Speech (or "On the Cult of Personality and Its Consequences")

<MS>

3. Bonus: Katima Mulilo is the capital of this country's Caprivi Strip. For ten points each:

[10] Name this country which contains Walvis Bay and the Skeleton Coast with capital at Windhoek. Its southern border is formed by the Orange River.

ANSWER: Republic of Namibia

[10] This desert, home to the Bushmen and the Makgadikgadi salt pan, is shared among Namibia, South Africa, and Botswana.

ANSWER: Kalahari Desert

[10] This river which rises in Angola as the Cubango River forms an inland delta in the Kalahari Desert in Botswana.

ANSWER: Okavango River

 $\langle JD \rangle$

4. Bonus: Gobind Singh said that as saint-soldiers, all members of his religion had to wear it. For ten points each:

[10] Identify this religiously symbolic dagger which is used to stir a sugar and water mixture during the baptism ceremony of a certain religion.

ANSWER: kirpan

[10] The kirpan is one of the Five Ks of this religion, whose male members are required to wear turbans. This religion follows the teachings of eleven gurus, including its founder, Guru Nanak.

ANSWER: Sikhism

[10] This eleventh and eternal Guru is a compilation of Sikh texts written by the fifth Guru, Arjun Dev.

ANSWER: Adi **Granth** (or Sri Guru **Granth** Sahib)

 $\langle BZ \rangle$

5. Bonus: This theory predicts that due to confinement, it would take an infinite amount of energy to separate two bound quarks. For ten points each:

[10] Name this branch of physics related to quantum mechanics that deals with the color charge of quarks and gluons. According to it, quarks interact weakly within the confines of the color force due to asymptotic freedom.

ANSWER: quantum chromodynamics (or QCD)

[10] The color force in quantum chromodynamics is essentially this other force, whose carriers are gluons and which holds quarks together. It is vastly more powerful than the weak force.

ANSWER: **strong** nuclear force (or **strong** interaction)

[10] The strong force holds quarks together to create these composite particles. Most of these particles are either baryons, which are made of three quarks, or mesons, which are made of a quark and an antiquark.

ANSWER: hadrons

 $\langle BZ \rangle$

6. Bonus: Name the following science-fiction writers, for ten points each:

[10] This author wrote of the six-sunned planet Kalgash in *Nightfall*, as well as penning *I*, *Robot* and the *Foundation* series. His recurring character R. Daneel Olivaw created a "Zeroth Law" to add to this author's 3 Laws of Robotics.

ANSWER: Isaac Asimov

[10] This author won the first Nebula award for his novel *Dune*, which tells of Paul Atreides rise to power on the spice-mining planet of Arrakis.

ANSWER: Frank Herbert

[10] This man borrowed a line from Exodus to title his *Stranger in a Strange Land*, in which Valentine Michael Smith returns from Mars and finds out he is heir to the Lyle Drive fortune.

ANSWER: Robert Anson Heinlein

 $\langle MS \rangle$

7. Bonus: This molecule consists of N-acetyl-glucos-amine monomers linked by beta 1,4 glycosidic bonds. For ten points

[10] Name this polymer responsible for the hard exoskeletons of arthropods.

ANSWER: chitin

[10] Members of this kingdom have cell walls made of chitin. These organisms usually have hyphae and a mycelium, and include mushrooms and yeasts.

ANSWER: Fungi or fungus

[10] Chitin also covers this feeding structure found in molluscs, which predatory cones have modified into a poisonous harpoon. In most molluscs, however, this structure functions as a tongue-like scraper.

ANSWER: radula

 $\langle BZ \rangle$

- 8. Bonus: Frederick William the Great Elector encouraged these people to immigrate to Brandenburg-Prussia with his Edict of Potsdam. For ten points each:
- [10] Name these historically persecuted French Protestants, thousands of whom were killed after Catherine de'Medici instigated the St. Bartholomew's Day Massacre.

ANSWER: **Huguenot**s (prompt on "French Calvinists" or "Calvinists")

[10] Henry IV granted tolerance to the Huguenots with this 1598 edict, which allowed them to openly practice their religion and build fortified strongholds, such as the one at La Rochelle.

ANSWER: Edict of Nantes ("nahnt")

[10] The Edict of Nantes was slowly weakened by Henry IV's successors until Louis XIV revoked it with this edict. It declared Protestantism illegal and hurt the French economy due to a mass emigration of Huguenots.

ANSWER: Edict of Fontainebleau

<BZ>

9. Bonus: They typically measure physiological changes in such factors as blood pressure and galvanic skin response. For ten points each:

[10] Name these machines which can be used to detect lies.

ANSWER: polygraph machines

[10] Polygraph tests are typically not permitted as evidence in court due to the prevalence of these cases, where people who tell the truth are marked as liars. This term also describes people mistakenly diagnosed with a disease.

ANSWER: false positive

[10] This American psychologist studied how facial expressions called microexpressions could be used in lie detection. His work was incorporated in the TSA's SPOT program.

ANSWER: Paul Ekman

<HX>

10. Bonus: A viola solo in the Phrygian mode in this work dominated its composer's later opera, *The Pilgrim's Progress*. For ten points each:

[10] Name this 20th century work based on the hymn "Why Fumeth in Fight." It calls for a string octet placed apart from the general orchestra to imitate the sound of an organ.

ANSWER: Fantasia on a Theme by Thomas Tallis (accept Tallis Fantasia)

[10] This English composer of Fantasia on a Theme by Thomas Tallis nicknamed his first symphony A Sea Symphony and also composed a Fantasia on "Greensleeves".

ANSWER: Ralph Vaughan Williams (do not accept or prompt on partial answer)

[10] Vaughan Williams was inspired by a George Meredith poem to compose *The Lark Ascending* for this smallest string instrument, which plays extensive duets with the viola in the *Tallis Fantasia*.

ANSWER: violin

 $\langle HX \rangle$

11. Bonus: This city was once ruled by Dionysius II. For ten points each:

[10] Identify this city which the general Gylippus defended successfully from an expedition led by Nicias, Demosthenes, and Alcibiades.

ANSWER: Syracuse (or Syrakousai)

[10] The attempted capture of Syracuse during the Sicilian Expedition was an event in this 431-404 BCE war fought between Sparta and Athens.

ANSWER: Peloponnesian War

[10] This man led Athens in the early stages of the Peloponnesian War but died from the plague after ordering the Athenian soldiers to defend by hiding behind the Long Walls.

ANSWER: Pericles

<JD>

12. Bonus: This woman is sold into slavery along with her mother Vasiliki. For ten points each:

[10] Name this daughter of Ali Pasha, whose family is betrayed by Fernand Mondego. She is rescued from slavery by the protagonist of the novel in which she appears.

ANSWER: Haydée

[10] Haydée winds up with this novel's title character, despite his initial love for Mercedes. This work's protagonist, Edmond Dantes, is imprisoned at the Chateau D'If, but returns to take revenge on those who put him there.

ANSWER: The Count of Monte Cristo (or Le Comte de Monte-Cristo)

[10] *The Count of Monte Cristo* is a novel by this French author, known for his tales of adventure like *The Man in the Iron Mask* and *The Three Musketeers*.

ANSWER: Alexandre **Dumas**, pere

13. Bonus: This comedy duo got their start on MADtv with a Deal or No Deal spoof. For ten points each:

[10] Name this show on Comedy Central in which two black comedians perform skits like *Dueling Hats*, *Substitute Teacher*, and *Pizza Order*.

ANSWER: Key and Peele

[10] Key and Peele have also done multiple skits which mention the teeth of these animals, a talking one of which is voiced by Eddie Murphy in *Shrek*.

ANSWER: donkey

[10] Key and Peele have done multiple skits involving this politician, showing him doing drugs in college and getting help from his anger translator Luther while calling his wife Michelle.

ANSWER: Barack Obama

 $\langle DA \rangle$

14. Bonus: Mulliken's scale for measuring this quantity sets it equal to the mean of electron affinity and ionization energy. For ten points each:

[10] Identify this quantity defined as the tendency of an atom to attract an electron. On most scales, fluorine has the highest possible value, while francium has the lowest.

ANSWER: electronegativity

[10] The most commonly used scale for measuring electronegativity is named after this British scientist, who came up with a triple-helix model of DNA and took high doses of Vitamin C to prevent colds.

ANSWER: Linus Pauling

[10] The Allred-Rochow formula for electronegativity sets it equal to a linear function of this quantity divided by the covalent radius squared. The value for this quantity is lower than the atomic number due to electron shielding.

ANSWER: effective nuclear charge (or Z-sub-eff)

<MS>

15. Bonus: Name the following wielders of mythological swords, for ten points each:

[10] This owner of the sword Hrunting and hero of a namesake Anglo-Saxon epic discovered that the weapon failed to work against Grendel's Mother, forcing him to discard it.

ANSWER: Beowulf

[10] This kami of storms and the sea slew the dragon Orochi and pulled the sword Kusanagi from its tail. He was born with his siblings, the goddess of the Sun and the god of the Moon, from Izanagi's face.

ANSWER: Susano'o-no-mikito

[10] This Greek hero, the half-brother of Teucer, received a sword from Hector in exchange for a purple sash after their battle. After a fit of divinely-induced madness, this man impaled himself in the chest with that sword.

ANSWER: <u>Ajax the Greater</u> (or <u>Telamonian Ajax</u>; or <u>Ajax</u>, son of <u>Telamon</u>; accept <u>Ajax</u> in place of "Ajax"; prompt on just "Ajax"; do not accept or prompt on "Locrian Ajax" or Ajax the Lesser")

 $\langle BZ \rangle$

16. Bonus: Answer the following about roots of unity, for ten points each:

[10] When graphed on the complex plane, the roots of unity all lie on one of these figures, because they are all one unit distance away from the origin.

ANSWER: circle

[10] The nth roots of unity can be expressed as this constant raised to the power of a multiple of 2pi times i over n. This base of the natural logarithm is approximately equal to 2.718 and is named for a Swiss mathematician.

ANSWER: *e* (or **Euler**'s number, also accept **Napier**'s constant)

[10] This theorem can be used to show that the *n*th roots of unity form a regular *n*-gon. It states that cosine of *x* plus *i* times the sine of *x* all raised to the *n*th power equals the cosine of nx plus *i* times the sine of nx.

ANSWER: De Moivre's theorem/formula/identity

17. Bonus: Answer the following about the short stories of Ryunosuke Akutagawa, for ten points each:

[10] In this short story, a man waiting out a rainstorm finds an old woman stealing hair from corpses to make wigs, so he steals her robe.

ANSWER: "Rashomon"

[10] This Akutagawa short story relays conflicting accounts of a rape and murder in the title location involving Takehiro, Tajomaru, and Masago.

ANSWER: "In a Grove"

[10] The Buddha tries to rescue Kandata in an Akutagawa story titled after the thread of one of these animals. In an E.B. White novel, one of these named Charlotte helps save the pig Wilbur.

ANSWER: spiders

<MS>

18. Bonus: This movement's namesake leader rode in a carriage with his son "Legal Tender". For ten points each:

[10] Identify this tiny "Commonweal Army," all the members of whom were arrested for walking on the grass in front of the Capitol. It demanded additional public works spending to alleviate unemployment caused by the Panic of 1893.

ANSWER: Coxey's Army

[10] Coxey was born in this state, through which his "army" passed after leaving Massillon, Ohio and moving east. The army picked up a few supporters in this state's cities of Homestead and Pittsburgh.

ANSWER: Pennsylvania

[10] Another protest of the late 19th century was a strike by employees of this railroad car company. Grover Cleveland ordered federal troops to quash the strike, much to the dismay of its instigator Eugene Debs.

ANSWER: Pullman Strike

 $\langle MS \rangle$

19. Bonus: Answer the following about Byzantine art, for ten points each:

[10] Almost all Byzantine works of art were in this form, in which small pieces of colored stone called *tesserae* are put together, typically by attaching them to a wall.

ANSWER: mosaics

[10] The hallmark sign of Byzantine mosaics is the usage of this color for their backgrounds.

ANSWER: gold (or yellow, I guess)

[10] The Basilica of San Vitale contains mosaics of Justinian and Theodora, and has a base with this distinctive shape.

Charlemagne and Odo of Metz copied it, using this polygonal shape as the base of the chapel at Aachen.

ANSWER: octagon

 $\langle MS \rangle$

20. Bonus: He allegedly died after refusing to leave a banquet despite needing to relieve himself. For ten points each:

[10] Identify this Danish astronomer, who wrote *De nova stella*. His very detailed measurements enabled his assistant to later develop the laws of planetary motion.

ANSWER: Tycho **Brahe**

[10] The three laws of planetary motion were put forth by this German student of Brahe.

ANSWER: Johannes Kepler

[10] The Kepler Conjecture deals with the tightest possible packing of these shapes. In his *Almagest*, Ptolemy posits that the universe is this shape, with Earth at the center.

ANSWER: spheres

21. Bonus: Answer some questions about the assassination of Ahmed al-Jabari, for ten points each:

[10] al-Jabari was assassinated in this region claimed by Palestine. The subsequent rocket attacks launched by terrorists in this region were the most violent since Israel's 2008 invasion.

ANSWER: Gaza Strip

[10] al-Jabari was the military commander of this terrorist organization that governs the Gaza strip.

ANSWER: Hamas

[10] Hamas is opposed to this slightly more sane Palestinian party, founded by Yasser Arafat. This largest faction of the PLO leads the Palestinian National Authority, which primarily governs the West Bank.

ANSWER: Fatah

 $\langle DA \rangle$

22. Bonus: Leukodystrophies are caused by this material degenerating in the brain. For ten points each::

[10] Name this essential fatty "sheath" that surrounds axons and facilitates the movement of electrical impulses.

ANSWER: myelin sheath

[10] Myelin is essential to the function of these cells, which are composed of axons and dendrites. In these cells, gaps in the myelin sheath are known as nodes of Ranvier.

ANSWER: <u>neuron</u>s (accept <u>neurone</u> or <u>nerve cell</u>s)

[10] Unlike oligodendrocytes, which myelinate neurons in the central nervous system, these cells produce the myelin that surrounds neurons in the peripheral nervous system.

ANSWER: Schwann cells (or neurolemmocytes)

<MiP>