**LADUE INVITATIONAL SPRING TOURNAMENT 2013**

Round 3

**TOSS-UPS**

**1. This country contains the eastern half of the region of Makran, and its city of Quetta lies southeast of the Bolan Pass. This country is home to the Pothohar Plateau, which lies north of the Salt Range and contains the cities of Jhelum and Attock. The Baltoro Glacier is located in its province of Gilgit-Baltistan, while its southwest is dominated by Balochistan Province. Its city of (\*)** Peshawar lies southeast of the Khyber Pass, while its city of Lahore lies west of the Thar Desert and is the capital of Punjab Province. K2 lies on its border with China, and its city of Karachi lies on the Arabian Sea near the mouth of the Indus River. For ten points, name this country with capital at Islamabad.  
ANSWER: Islamic Republic of **Pakistan**  
<JD>  
  
**2. In this novel, Clopin Trouillefou’s request for charity interrupts Gringoire trying to stage a play, and is itself halted by Jacques Coppenole leading the election for “Pope of Fools.” This novel’s protagonist is ordered to kidnap the central female character, who owns the goat Djali and is accused of witchcraft by this book’s antagonist. Captain (\*)** Phoebus is stabbed by Claude Frollo, but the attack is blamed on a woman who is saved by the title character’s swinging down from his tower. For ten points, identify this novel in which Esmerelda is loved by the title deformed bell-ringer, a work by Victor Hugo.  
ANSWER: *The* ***Hunchback of Notre-Dame*** (or ***Notre-Dame de Paris***)  
<MS>  
  
**3. In one battle, this leader’s troops made ropes of vine and rappelled down a cliff to surprise the forces of Gaius Glaber. His subordinate Crixus was defeated near Mount Garganus, and this man later routed two legions under Mummius. After escaping from Lentulus Batiatus, he set up camp on the side of (\*)** Mt. Vesuvius. This man’s final defeat at the Siler River led to the crucifixion of his troops along the Appian Way by the victorious forces led by Crassus and Pompey. For ten points, name this general in the Third Servile War, a former gladiator who led a slave rebellion against the Roman Republic.  
ANSWER: **Spartacus**  
<CC>  
  
**4. A theorem named after this many tangent circles produces three concurrent lines. Aside from three, this is the only number of dimensions in which a vector cross product can be defined. This is the smallest positive number which cannot be represented as a sum of at most three squares, and there are this many (\*)** Millenium Prize Problems. This is the smallest number of sides a non-constructible regular polygon can have. The most likely-rolled sum of a pair of six-sided dice is, for ten points, what number of sides in a heptagon, the positive square root of 49?  
ANSWER: **seven**  
<MS>  
  
**5. This reaction’s “triple product” of density, temperature, and time is a generalization of the earlier Lawson criterion for it. Muons can catalyze this process by replacing electrons in hydrogen bonds, and the beam-target variety of this reaction loses too much energy to bremsstrahlung. Failing to account for the less-than-100% Faraday-efficiency in the (\*)** electrolysis of water led Pons and Fleischmann to falsely claim this process had occurred at room temperature, its “cold” type. This type of reaction is central to the CNO cycle and the proton-proton chain. For ten points, identify this process in which multiple atomic nuclei are combined.  
ANSWER: nuclear **fusion**  
<MS>  
  
**6. Enoch Soames sells his soul to be able to do this action, and the hunter Eckels steps on a butterfly after performing this action in Bradbury’s “A Sound of Thunder.” In a novel whose protagonist performs this action after being hit on the head, he becomes the Boss after predicting an eclipse, and another person who does this meets the (\*)** Eloi and the Morlocks. Hank Morgan does it in *A Connecticut Yankee in King Arthur’s Court*, and Ebeneezer Scrooge does it with the assistance of ghosts. For ten points, identify this action which the Traveller builds a machine to do in an H.G. Wells novel.  
ANSWER: **time travel** (accept equivalents, also accept an answer specific to either direction like **going back in time**)  
<MS>

**7. She’s not Marilyn Monroe, but Andy Warhol’s *Thirty are Better Than One* is a silkscreen of this person. In another painting, a winding path is seen beside this woman’s right arm, while a bridge crosses a stream above her left shoulder. Marcel Duchamp famously drew a (\*)** moustache on a postcard of a painting this figure in *L.H.O.O.Q.* That painting employs its artist’s famous *sfumato* technique, and was stolen in 1911 by Vincenzo Peruggia. Vasari claims that this woman was the wife of Francesco del Giocondo. For ten points, identify this woman, whose arms-crossed, enigmatic pose is depicted in a Leonardo da Vinci painting.  
ANSWER: ***Mona Lisa*** (prompt on any specific names who may be the Mona Lisa, like Lisa Gherardini)  
<MS>  
  
**8. These entities can be modeled by the Rayleigh-Plesset equation, which assumes an infinite liquid volume. Sound causes short bursts of light to emit from these objects in sonoluminescence. They’re not forks, but thousands of “replication” ones open up during DNA replication, and a (\*)** sorting algorithm which compares adjacent elements of a list is named after them. Electrically charged particles leave helical paths in the superheated liquid of a “chamber” named for these things, which largely replaced cloud chambers. For ten points, name these hollow spherical objects that can be formed by a thin film of soapy water enclosing some air.  
ANSWER: **bubble**s  
<HX>  
  
**9. This organization appointed regional leaders called *Gauleiters* and was centered at the Brown House. It consolidated its power after Rinus van der Lubbe was executed for an act of arson, and their newspaper was named the *Volkisch Observer*. One faction of them was eliminated during Operation Hummingbird, during which leaders like (\*)** Ernst Röhm were killed in the Night of the Long Knives. Its leader was arrested for instigating the failed Beer Hall Putsch in the Weimar Republic and used his time in prison to write *Mein Kampf*. For ten points, identify this German political party led by Adolf Hitler.  
ANSWER: **Nazi** Party (accept **National Socialist** German Workers’ Party, **Nationalsozialistische** Deutsche Arbeiterpartei, or **NSDAP**)  
<MS>  
  
**10. One parody of this song says that the singer is buying all the machines in the Sauna Air and another mentions a horse in the Olympics owned by Mitt Romney. The University of Oregon video for this song has a Duck dancing in front of cheerleaders and the rowing team, while MIT’s version includes a shot of Noam Chomsky parodying its title with his name. This song’s music video sees a (\*)** Go board explode while the singer yells on a party bus, and later there is a dance-off in a parking garage. This song is named for a district of Seoul, and popularized a “horse-riding” dance. Featuring the line “heyyy, sexy lady,” is for ten points, what KPop song by PSY?  
ANSWER: ***Gangnam Style***  
<DA>

**HALFTIME**

**11. This figure placed upon four hills the cut-up remains of some birds, which miraculously rejoined when he called for them. Though he is not a friend of Daniel, Allah cooled a fire this man was thrown into.  Eid al-Adha commemorates his faith and bravery, and unlike the Bible, the Qur’an relates that this man was told of his wife’s pregnancy by three angels who refused to eat. The Qur’an names this man’s father Azar, though in the Old Testament it is (\*)** Terah who owns the shop of idols this man destroys. This man’s faith was tested when he was told to sacrifice his son. For ten points, name this patriarch of Islam and Judeo-Christianity, the father of Ishmael and Isaac and husband of Sarah.  
ANSWER: **Ibrahim** or **Abraham**  
<MS>  
  
**12. Natives of this country included the Ciboney (“see-bone-ay”), who were driven to its western part by the Taino and decimated by European contact. While a colony, its minister criticized McKinley in the De Lome letter, which, along with the actions of (\*)** Butcher Weyler, prompted a conflict centering on this country. One leader of this country led the 26th of July Movement and overthrew Fulgencio Batista. The Soviet Union attempted to build missile launch sites in this country after the failed Bay of Pigs invasion. For 10 points, name this Caribbean country formerly led by Fidel Castro.  
ANSWER:Republic of **Cuba** (also accept **Haiti** before McKinley, do not accept or prompt afterwards)  
<MiP>  
**13. This quantity remains constant in a Joule-Thomson process. The van’t Hoff equation relates the derivative of the natural log of the equilibrium constant to the change in this quantity, and Gibbs free energy equals this quantity minus the product of temperature and entropy. The change in this quantity can be found by subtracting the (\*)** heats of formation of the reactants from those of the products, since the change is independent of the reaction path according to Hess’s Law. For ten points, identify this thermodynamic quantity, equal to internal energy plus pressure times volume, and symbolized H.  
ANSWER: **enthalpy** (accept ***H*** before mentioned; prompt on “delta H”)  
<MS>  
  
**14. In one of this author’s novels, Lady Russell convinces the protagonist to break off her engagement with Frederick Wentworth. In another, Mr. Yates encourages a production of the play *Lovers’ Vows* while Thomas Bertram is away. In addition to writing about Anne Elliot in (\*)** *Persuasion*, this author wrote a book in which John Willoughby hits on a woman who sprains her ankle in the rain, Marianne Dashwood. This author’s most famous work sees clergyman William Collins marry Charlotte Lucas, and Georgiana helps her brother Fitzwilliam Darcy end up with Elizabeth Bennet. For ten points, name this author of *Sense and Sensibility* and *Pride and Prejudice*.  
ANSWER: Jane **Austen**  
<MS>  
  
**15. One character in this opera vows to help Marcellina enforce punishment for a defaulted loan in “La vendetta”, and while measuring the space for his bridal bed, the title character of this opera sings the duet “Cinque, dieci, venti, trenta” with his fiancée. This opera was the first of three collaborations with the librettist Lorenzo Da Ponte, and sees the music teacher Basilio spread rumors about (\*)** Cherubino’s affections for Countess Rosina, who disguises herself as Susanna to fool her husband. Count Almaviva’s amorous intents are the subject of, for ten points, what Mozart opera, which takes place after the events of Rossini’s *The Barber of Seville*?  
ANSWER: *The* ***Marriage of Figaro*** (accept *Le* ***Nozze di Figaro*)**  
<HX>  
  
**16. This war’s battles of Chateauguay and Crysler’s Farm caused one side to give up on an attempt to invade their northern neighbor. Edward Pakenham died during one of this war’s battles, whose winning side was assisted by the pirate Jean Lafitte. One skirmish in this war resulted in the sinking of the *Guerriere*, and one side’s capital was (\*)** burned after they lost at Bladensburg. Francis Scott Key composed “The Star-Spangled Banner” while watching the shelling of Fort McHenry during this war. For ten points, name this war between Britain and America which resolved by the Treaty of Ghent and fought about thirty years after the Revolutionary War.  
ANSWER: War of **1812**  
<MS>  
  
**17. In the presence of these organisms, humans and other mammals produce large amounts of Immunoglobulin E. They are grouped on scales such as infrapopulations, metacommunities, and infracommunities, and cuckoos are the “brood” kind of these organisms since they rely on other birds to care for their young. Some members of the (\*)** “endo” type of these organisms can be targeted by anthelmintic medication. Diseases caused by these kinds of organisms include elephantiasis, Lyme disease, and bubonic plague. For ten points, name these organisms which benefit to the detriment of a host organism, examples of which include tapeworms and fleas.  
ANSWER: **parasite**s (accept **parasitism** or word forms; prompt on “worms” or “helminths” until “brood” is mentioned)  
<BZ>  
  
**18. The One Million Signatures Campaign is meant to benefit these people, for whom the United Nations CEDAW [“see-DAW”] advocates. Malala Yousufzai was shot after blogging support for a certain right of this group, for whom a new city near Hofuf will soon be built. The 2011 Nobel Peace Prize was awarded to three people fighting for the rights of this group. None of these people are allowed to (\*)** drive in Saudi Arabia, and to help fill his cabinet as governor, Mitt Romney requested “whole binders full of” them. For ten points, what is this social group, whose wages in the United States are about three-fourths that of men?  
ANSWER: **women** (or **females** or **girl**s or anything that indicates someone of the female gender)  
<MS>

**19. This philosopher contended that the first thing to do in conducting state affairs is to “rectify names”, and emphasized music and archery among the “Six Arts”. One follower of this philosopher used the example of reactions to a child falling down a well to exemplify innate goodness, which begins the *Trimetric Classic*. This namesake of a philosophy advocated by (\*)** Mencius argued that rulers must cultivate “ren”, or compassion, which formed the basis of the Mandate of Heaven. He also regarded filial piety as the most basic form of altruism. For ten points, name this Chinese philosopher whose beliefs are collected in the *Analects*.  
ANSWER: **Confucius** or **Kong Zi** or **Kong Fu Zi**  
<HX>  
  
**20. In one of this author’s works, a doctor delivers a baby by C-section with a knife while its Native American father slits his own throat. That story features a character who more famously warns that Max and Al will kill Ole Anderson. In addition to writing “Indian Camp” and “The (\*)** Killers” about Nick Adams, this author wrote a novel whose main character walks back to his hotel in the rain after discovering that his child was stillborn and his wife Catherine Barkley is dead.  For ten points, name this author who wrote about Frederic Henry in *A Farewell to Arms*.    
ANSWER: Ernest **Hemingway**  
<MP>

**End of regulation, only proceed if tied**

**21. This figure was healed with milk after his eyes were gouged out to become the Sun and Moon. The crocodile god Sobek devised a trap to recover this god’s hands from the Nile. A god of silence depicted as a child holding a finger to his mouth is this god’s younger form of Harpokrates, and his sons guarded the canopic jars. In a series of contests for the control of Egypt, he harpooned a hippopotamus, (\*)** raced in stone boats, and contaminated his opponent’s lettuce. This god’s wife was Hathor, and he was conceived when his mother Isis impregnated herself by the dead Osiris. For ten points, name this falcon-headed Egyptian god who warred with his uncle Set.  
ANSWER: **Horus** (accept **Neferhor** or **Harsiesis** or **Harpokrates** before mention)  
<BZ>  
  
**22. This man’s family helped a certain empire build catapults for a siege while he was a tax collector for that empire. Following the Battle of Curzola, he was imprisoned and met Rustichello da Pisa, who wrote a book of this man’s accomplishments titled *Il Milione*. Two Dominican monks and gifts from Pope Gregory X were carried (\*)** east by Maffeo and Niccolo, who were this man’s uncle and father, respectively.  This man helped accompany a Mongol princess to Persia and had earlier visited China and the summer palace of Xanadu. For ten points, name this Venetian traveler who wrote about his time in the court of Kublai Khan.  
ANSWER: **Marco Polo** (prompt on “Polo” or “M. Polo”)  
<CC>

**BONUSES**

1. Bonus: The SI unit of magnetic flux density is named after him. For ten points each:  
[10] Identify this Serbian-American physicist, who worked with Westinghouse to promote AC power. He also invented a namesake “coil” which produces high voltage bursts of electricity.  
ANSWER: Nikola **Tesla**  
[10] The “war of the currents” was fought between Tesla and this other inventor, known as the “Wizard of Menlo Park.” He invented the first practical incandescent lightbulb and the stock ticker.  
ANSWER: Thomas **Edison**  
[10] One tesla is equal to this unit of magnetic flux divided by one meter-squared. It is named after the scientist who worked with Gauss to create one of the first working telegraphs.  
ANSWER: **weber**  
<MS>  
  
2. Bonus: This woman’s 1000 predecessors had all been killed on their wedding night. For ten points each:  
[10] Identify this woman who, prompted by her sister Dinazade, tells stories exciting enough to entertain her husband Shahryar.  
ANSWER: **Scheherazade**  
[10] Scheherazade’s exploits are part of the frame story of this Middle Eastern collection, which contains tales like “Sinbad the Sailor” and “Aladdin”  
ANSWER: ***Arabian Nights*** or ***One Thousand and One Nights***  
[10] This character from the *Arabian Nights* teaches his brother Cassim the magic words “Open Sesame” to get into a cave filled with thieves’ treasure.  
ANSWER: **Ali Baba**  
<MS>  
  
3. Bonus: The Olive Branch Petition was drafted by delegates from one of them. For ten points each:  
[10] Name these meetings of colonial delegates that governed the United States during the American Revolution. The second one of these proclaimed George Washington as the head of the Army.  
ANSWER: **Continental Congress**es  
[10] This document was approved by the Second Continental Congress on July 4th, 1776. This document was written to inform the British that America was no longer one of its colonies.  
ANSWER: American **Declaration of Independence**  
[10] This 1754 gathering discussed the problem of attacking French forces and Indian tribes. Benjamin Franklin drew his famous “Join or Die” cartoon to gain support for the plan of union he proposed during this event.  
ANSWER: **Albany Congress**  
<MiP>  
  
4. Bonus: It was the seat of the rebellion government until the liberation of Tripoli. For ten points each:  
[10] Identify this city, in which a September 11, 2012 attack on the US Embassy led to the death of Ambassador Chris Stevens.  
ANSWER: **Benghazi**  
[10] This UN Ambassador was considered for appointment to Secretary of State in President Obama’s second term, but withdrew her name due to the expected controversy over the Benghazi attacks..  
ANSWER: Susan **Rice**  
[10] This Arizona senator and former presidential candidate attacked Rice for claiming that the Benghazi attack was the result of a video. He appeared on *Face the Nation* with Rice in November.  
ANSWER: John **McCain**  
<DA>  
5. Bonus: Answer the following about Rosh Hashanah, for ten points each:  
[10] Rosh Hashanah is a holiday celebrating one of these annual occurrences, which occurs on January 1 in the Gregorian calendar. The Chinese celebrate a “Lunar” one of these in February.  
ANSWER: **New Year**s (accept obvious equivalents)  
[10] Like at Yom Kippur, services at Rosh Hashanah often include the blowing of this ram’s horn.  
ANSWER: **shofar**  
[10] On Rosh Hashanah, people typically greet each other with this phrase. It is Hebrew for “a good year!”  
ANSWER: L’**shanah tovah**  
<MS>  
  
6. Bonus: Answer the following about the reign of Tiglath-Pileser III, for ten points each:  
[10] Tiglath-Pileser ruled the “neo-” version of this empire, whose other leaders included Sennacherib and Ashurbanipal.  
ANSWER: Neo-**Assyria**n Empire  
[10] To avoid dynastic provincial rule, Tiglath-Pileser typically appointed people of this type to govern. These people were castrated, often so that they could perform a specific duty like guarding harems.  
ANSWER: **eunuch**s  
[10] One of Tiglath-Pileser’s many victories was his over these people, who ultimately rose a century later to capture Nineveh and destroy the Neo-Assyrian Empire. They were themselves replaced by the Achaemenid Empire.  
ANSWER: **Medes** (or **Median**)  
<MS>  
  
7. Bonus: It moves outward when an economy expands or technology is improved. For ten points each:  
[10] Identify this curve from economics which plots the maximum quantity of one good that can be produced against another, such as the trade-off between guns and butter.  
ANSWER: **p**roduction **p**ossibility **f**rontier (or **p**roduction **p**ossibility **c**urve)  
[10] The slope at a given point on the PPF is the amount of one good to produce more of the other, the marginal opportunity type of this entity. The next-best alternative given up in a decision is referred to as the opportunity-*this*.  
ANSWER: **cost**  
[10] A graph similar to the PPF plots this quantity for all individuals in a society. Points on that curve are necessarily Pareto-efficient.  
ANSWER: **utility** (accept **UPF** or **utility possibility frontier**)  
<MS>  
  
8. Bonus: One character in this novel has a father who is paid to not grow alfafa. For ten points each:  
[10] Identify this Joseph Heller novel, which follows Yossarian, a bombardier based in Pianosa. He can only get out of flying missions if insane, but his desire to not fly demonstrates his sanity, this book’s title conundrum.  
ANSWER: ***Catch-22***  
[10] This character in *Catch-22* profits from the war by setting up M&M Enterprises. In one scene, he corners the entire market on Egyptian cotton.  
ANSWER: **Milo** **Minderbinder** (accept either)  
[10] This character, upon hearing of a certain man’s death, keeps trying to kill Yossarian, though Yossarian still wants to help her sister escape to Sweden.  
ANSWER: **Nately’s whore** (do not accept Nately)  
<MS>

9. Bonus: In alkanes, single bonds exist between all atoms of this element. For ten points each:  
[10] Identify this element found in all organic molecules. Its atomic number is 6 and its symbol is C.  
ANSWER: **carbon**  
[10] Acetylene is the simplest example of this type of hydrocarbon, in which a pair of carbon atoms has a triple bond between them.  
ANSWER: **alkyne**s  
[10] The Raney variety of this element is sometimes used to hydrogenate alkenes and alkynes. A tetracarbonyl of this element is the intermediate in the Mond Process which produces it.  
ANSWER: **nickel**  
<MS>  
  
10. Bonus: It can be decomposed into three major seconds, and names the interval between the fourth and seventh degree of a major scale. For ten points each:  
[10] Identify this interval, which is sometimes nicknamed “the devil in music” due to its dissonance. It is considered the most unstable interval, and was notably used by Bernstein in the opening of “Maria” from *West Side Story*.  
ANSWER: **tritone** or **augmented fourth**  
[10] Two major triads separated by a tritone forms this chord. In this chord’s namesake Stravinsky ballet, Charlatan’s flute makes puppets come alive.  
ANSWER: **Petrushka** chord  
[10] This interval, notated P8, is much more consonant than the tritone. It names the interval between two notes whose frequencies are in a ratio of 2 to 1, such as from an A to the next highest A.  
ANSWER: perfect **octave**  
<HX>  
  
11. Bonus: In humans, it is composed of 24 vertebrae plus the sacrum and coccyx. For ten points each:  
[10] Identify this support structure found in almost all chordates. An excessive curvature of this structure results in scoliosis, and it usually takes a slim “S” shape in an upright human.  
ANSWER: **spine** (or **spinal column**; accept **backbone**; accept **vertebral column**)  
[10] The embryos of many chordates contain this precursor to the spinal column, which is essentially a flexible support rod made of collagen. Unlike most other chordates, lancelets retain this structure as adults.  
ANSWER: **notochord**  
[10] These members of the subphylum Urochordata possess notochords as larvae, but then promptly lose it and settle down as sessile filter feeders devoid of any vertebrate characteristics.  
ANSWER: **tunicate**s (or **sea squirt**s)  
<BZ>  
  
12. Bonus: This novel’s protagonist is chased by Detective Fix, who thinks he is a bank robber. For ten points each:  
[10] Identify this Jules Verne novel in which Phileas Fogg bets that he can circumnavigate the globe in a certain amount of time.  
ANSWER: ***Around the World in Eighty Days*** (or *Le* ***tour de monde en quatre-vingts jours***)  
[10] In this Verne novel, Professor Lindenbrock finds a coded note in a Snorri Sturulson book, prompting an adventure through the subterranean world before escaping during an eruption of Stromboli.  
ANSWER: ***Journey to the Center of the Earth*** (or ***Voyage au centre de la Terre***)  
[10] This novel is a sequel to both *In Search of the Castaways* and *Twenty Thousand Leagues Under the Sea*. In it, Cyrus Smith and other Union soldiers escape from Richmond on a hot-air balloon, but get stuck in the title locale.  
ANSWER: *The* ***Mysterious Island*** (or *L'****Île mystérieuse***)  
<MS>

13. Bonus: He owns the spear Gungnir and sacrificed an eye to drink from the Well of Mimir. For ten points each:  
[10] Name this owner of the ravens Hugin and Munin who was the chief Norse deity and father of the Aesir.  
ANSWER: **Odin** (accept **Wotan** or **Woden**)  
[10] With his brothers Vili and Ve, Odin killed this primordial giant to build the world. He was formed in Ginnungagap by the union of fire and ice.  
ANSWER: **Ymir** (accept **Augelmir** or close pronunciations of that)  
[10] This cold and icy realm met with the fiery Muspelheim to create Ymir. According to some sources, the wicked dead are sent to this place instead of Hel.  
ANSWER: **Niflheim**r  
<BZ>  
  
14. Bonus: This group kidnapped American general James Dozier. For ten points each:  
[10] Identify this Italian terrorist organization led by Mario Moretti, which kidnapped and killed Aldo Moro during the Years of Lead.  
ANSWER: **Red Brigades** or **B**rigate **R**osse  
[10] The kidnapping of Prime Minister Aldo Moro took place on the Via Fani in this Italian capital city.  
ANSWER: **Rome**  
[10] Another former Prime Minister of Italy was this scandalous man, who resigned in 2011 and was succeeded by Mario Monti. He was accused of paying for underage prostitutes at his notorious “bunga bunga” parties.  
ANSWER: Silvio **Berlusconi**  
<MS>  
  
15. Bonus: Answer the following about angles, for ten points each:  
[10] If two triangles all have the same angles, then they have this property. Two figures with this property have the same shape but are not necessarily of the same size.  
ANSWER: **similar**ity  
[10] One of the three great classical math problems was whether or not it was possible to do this to an angle with a straightedge and compass. It is impossible for a 60-degree angle, because one cannot construct a 20-degree angle.  
ANSWER: **trisecting** the angle (or **dividing it into thirds** or equivalents)  
[10] Given two unit vectors, the angle between them is equal to what function of the magnitude of their cross product?  
ANSWER: **inverse sin**e (accept **arcsin**e)  
<MS>  
  
16. Bonus: Current players of this position include the Patriots’ Stephen Gostkowski and the Bears’ Robbie Gould. For ten points each:  
[10] Identify this position in American football, which is responsible for getting a ball through the uprights to make a field goal or get the extra point after a touchdown.  
ANSWER: place**kicker**  
[10] This kicker made the tying and winning field goals for the Patriots in the “Tuck Rule Game,” and later made the winning kicks in Super Bowls XXXVI (36) and XXXVIII (38). He now plays for the Colts.  
ANSWER: Adam **Vinatieri**  
[10] This kicker for the San Francisco 49ers is tied for the longest field goal record with Dempsey, Elam, and Janikowski. He’s played in both of the last two tie games, missing an OT field goal against the Rams in November.  
ANSWER: David **Akers**  
<MS>

17. Bonus: Its southernmost point on the Continent is Point Tarifa, while its northernmost is located in Galicia. For ten points each:  
[10] Name this country with cities such as Cadiz, Asturias, and Valladolid which lies across the Strait of Gibraltar from Morocco.  
ANSWER: Kingdom of **Spain** (or Reino de **España**)  
[10] This longest river on the Iberian Peninsula rises in the Meseta Central and flows past Toledo before emptying into the Atlantic at Lisbon.  
ANSWER: the **Tagus** (or **Tejo**)  
[10] The Ebro flows into the Mediterranean at Tarragona, a city in this autonomous community of Spain which has its capital at Barcelona.  
ANSWER: **Catalonia** (or **Cataluña**)  
<JD>  
  
18. Bonus: This man was almost assassinated by Valerie Solanas. For ten points each:  
[10] Identify this artist, who produced silkscreens of Marilyn Monroe in his “Factory” and paintings of Campbell’s soup cans. He dabbled in weird films with efforts like *Sleep* and *Empire*.  
ANSWER: Andy **Warhol**  
[10] Warhol was the most famous member of this movement of mid-20th century art, other artists in which included Jasper Johns and comic book-inspired Roy Lichtenstein.   
ANSWER: **pop** art  
[10] This man depicted Bobby Sands in a Christlike manner in *The citizen*, but is better known for including photos of a bodybuilder and a scantily-clad woman in his *Just what is it that makes today’s homes so different, so appealing?*  
ANSWER: Richard **Hamilton**  
<MS>

19. Bonus: Name the following world leaders present at the Paris peace conference, for ten points each:  
[10] This man represented the United States and was president during World War I. He had won election as a dark-horse candidate in 1912, and he was succeeded by Warren G. Harding.  
ANSWER: Thomas Woodrow **Wilson**  
[10] This man, nicknamed “The Tiger,” represented France during the negotiations, where he pushed hard for large war reparations. Earlier, he published Zola’s *J’accuse* as the editor and owner of the newspaper *L’Aurore*.  
ANSWER: Georges **Clemenceau**  
[10] Italy was nominally represented by this diplomat, though the English-speaking Sidney Sonnino often usurped his authority. He resigned after failing to acquire Fiume for Italy, and never ended up signing the treaty.  
ANSWER: Vittorio Emanuele **Orlando**  
<MS>  
  
20. Bonus: The most recent one of these events is named for Brunhes and Matuyama. For ten points each:  
[10] Identify these semi-regular events during which the Earth’s north and south magnetic poles switch places. The periods of time between these occurrences are known as chrons.  
ANSWER: geomagnetic **reversals**  
[10] A “superchron” of 40 million years occurred during this geologic period, which followed the Jurassic. It ended with the extinction of the dinosaurs 65 million years ago.  
ANSWER: **Cretaceous** period  
[10] The Vine-Matthews-Morley hypothesis confirmed Harry Hess’ theory on this process by finding bands of volcanic rocks that showed evidence of magnetic reversals. This process is centered at mid-ocean ridges.  
ANSWER: **seafloor spreading**  
<MS>  
  
21. Bonus: This work sees the female knight Britomart search for her love Artegal. For ten points each:  
[10] Identify this epic poem, whose title character represents Elizabeth I. In its first section, the Redcrosse Knight defeats a scary dragon.  
ANSWER: *The* ***Faerie Queene***  
[10] This English author of *The Faerie Queene* dedicated his *Amoretti* to his second wife, Elizabeth Boyle. The recurring character of Colin Clout first appears in his *Shepheardes Calendar*.  
ANSWER: Edmund **Spenser**  
[10] This is the name Tanaquill, who represents Queen Elizabeth, takes when she becomes the Faerie Queene. Guyon has her image emblazoned upon his shield.  
ANSWER: **Gloriana**  
<KT>  
  
22. Bonus: Its composer instructed that the sustain pedal be held throughout its first *Adagio sostenuto* movement, though that’s a bad idea on modern pianos. For ten points each:  
[10] Name this three-movement piece, whose third *Presto agitato* movement consists primarily of fast accented arpeggiations in C-sharp minor.  
ANSWER: ***Moonlight*** *Sonata* (accept either underlined part of ***Piano Sonata No. 14*** *in C minor,* ***“Quasi Una Fantasia”*** or **Op. 27 No. 2**)  
[10] This German composer’s piano sonatas include *Moonlight*, *Waldstein*, and *Appassionata*. He included a setting of Schiller’s “Ode to Joy” in his 9th Symphony, which he composed after going deaf.  
ANSWER: Ludwig van **Beethoven**  
[10] The fourth movement of this Beethoven symphony borrowed its theme from his earlier *Creatures of Prometheus*. It was originally dedicated to Napoleon, but its final version notes that it was “composed to celebrate the memory of a great man.”  
ANSWER: ***Eroica*** Symphony (accept either underlined part of *Beethoven’s Symphony No.* ***3*** *in E-Flat Major,* ***Op. 55***)  
<KT>