



Tossup 1: Math — Calculus (Computational: 30 Seconds)

Find dy over dx evaluated at (2,3) for the function x cubed plus y cubed equals five.	<u>-4/9</u>
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Bonus 1: Social Studies — Other

Answer these questions about the theological differences that led to the East-West Schism of 1054.	
A	Orthodox clergy generally disapproved of the use of this kind of bread for the Eucharist. <u>Unleavened bread</u> (<i>accept flatbread</i>)
B	The Roman Church insisted on this requirement for joining the priesthood, which the Greeks rejected. <u>Celibacy</u> (<i>accept unmarried, single, etc.</i>)
C	The Eastern Church disputed the addition of the phrase, "and the Son," to this Creed adopted in 325. <u>Nicene Creed</u> (<i>accept <u>Nicean Creed</u></i>)
D	Name one of the eastern cities, other than Constantinople, whose Patriarchs claimed equal authority with the Pope. <u>Alexandria, Antioch, or Jerusalem</u>



Tossup 2: Science — Chemistry

<p>First proposed as a measurement by Linus Pauling in 1932, it has been defined in numerous ways. The Mullikan scale defines it as the average of ionization energy and electron affinity, and the Pauling scale measures it on a scale from .7 for francium to 4.0 for fluorine. Name this property of elements describing tendency of an atom to attract electrons.</p>	<p><u>Electronegativity</u></p>
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Bonus 2: Literature — Mythology

<p>Answer the following about minor Ancient Greek deities.</p>		
<p>A</p>	<p>The Fates were the daughters of Themis, the goddess of this area of study, which makes sense given the job that the Fates carried out.</p>	<p><u>Law</u> (<i>accept similar</i>)</p>
<p>B</p>	<p>There is a small town near Los Angeles named for this deity of fruit trees; which also lends part of her name to the type of fruit which includes apples and pears.</p>	<p><u>Pomona</u></p>
<p>C</p>	<p>She was the goddess of vengeance; personifying the righteous anger of the gods. Her form is the same as the modern depiction of angels.</p>	<p><u>Nemesis</u> (<i>also accept Rhamnous</i>)</p>
<p>D</p>	<p>A goddess from Asia Minor, she eventually became associated with ghosts and spirits, and later by association, witchcraft and sorcery.</p>	<p><u>Hecate</u> (<i>HEK-ah-tee</i>)</p>



Tossup 3: Social Studies — U.S. History

<p>His anti-Communist statement "You can't shoot an idea with a gun," earned him a commanding lead going into the Republican Convention. The momentum didn't stop there, considering his opponent suffered a three-way party split and was forced to compete with Henry Wallace and Dixiecrat Strom Thurmond. Name this man who, contrary to a newspaper report, did not win the 1948 Presidential election over Harry Truman.</p>	<p>Thomas <u>Dewey</u></p>
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Bonus 3: Math — General

Identify these mathematical theorems.		
A	This theorem states that polynomials of degree five or greater have no general solution.	<u>Abel-Ruffini</u> theorem
B	This theorem states that the dimension of a matrix's image and the dimension of its kernel sum to the number of columns.	<u>Rank-nullity</u> theorem
C	Recently proved by Grigori Perelman, this famed once-conjecture by a French topologist is about spheres.	<u>Poincaré</u> conjecture/theorem
D	This theorem states that a continuous function with equal values on the boundary of an interval must have a critical point somewhere within that interval.	<u>Rolle's</u> theorem



Tossup 4: Fine Arts — Music

Its composer started to become deaf in 1874, after finishing the first movement of this work, titled Vysehrad (*VISH-ur-ahd*). Another movement, named Vltava in Czech, evokes the sounds of the titular river, and the other movements similarly illustrate the land of Bohemia. Identify this collection of six symphonic poems, including Die Moldau, composed by Bedrich Smetana.

Ma Vlast (accept *My Country or My Fatherland*)

Bonus 4: Science — Earth Science

Identify these types of elastic waves.

A This body wave is able to travel through both solid and liquid materials. **P** (accept *Primary waves*)

B This type of body wave cannot move through liquids. **S** (accept *Secondary waves*)

C This type of surface wave only moves horizontally. **Love waves**

D This surface wave can move both horizontally and vertically. **Rayleigh waves**



Tossup 5: Literature — Literature

<p>Three of this man's novels take place in the capital of the fictional state of Winnemac. All three are named after their protagonists; one, after a doctor whose wife dies of the plague he is trying to fight. Another was about an impious and hypocritical reverend who was very successful regardless. The third, perhaps his most famous novel, was a satire about a 1920s real-estate broker who isn't sure what he wants. Name this American author and inventor of Gopher Prairie, Minnesota and Zenith, Winnemac, and author of Arrowsmith, Elmer Gantry, and Babbitt.</p>	<p>Sinclair <u>Lewis</u></p>
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Bonus 5: Fine Arts — Visual Art

<p>Identify these artists of works of art that are very large in scale.</p>		
<p>A</p>	<p>This man's Guernica is over 25 feet long, definitely fitting the bill as massive.</p>	<p>Pablo <u>Picasso</u></p>
<p>B</p>	<p>This man was famous for his oversized representations of things, including a giant clothespin and a giant tube of lipstick.</p>	<p>Claes <u>Oldenburg</u></p>
<p>C</p>	<p>Measuring over 16 by 23 feet, this man's Raft of the Medusa is an icon of French Romanticism.</p>	<p>Theodore <u>Gericault</u></p>
<p>D</p>	<p>This man's Sunday Afternoon on the Island of La Grande Jatte is a massive example of his pointillist style.</p>	<p>Georges <u>Seurat</u></p>



Tossup 6: Math — Algebra (Computational: 30 Seconds)

Simplify the following product. The log base 7 of 5, times the log base 5 of 9, times the log base 3 of 49.	<u>4</u>
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Bonus 6: Literature — Literature

Answer the following about Shakespeare's Macbeth.	
A	At the beginning of the play, Macbeth is given the title of "Thane of" this area. <u>Cawdor</u> (<i>do not accept Glamis, as he already had that title</i>)
B	After Macbeth murdered King Duncan, Malcolm fled to England while this other son fled to Ireland. <u>Donalbain</u>
C	According to the Three Witches, Macbeth couldn't be overthrown until wood from this forest came. <u>Birnam</u>
D	Macbeth is finally slain by this man, who is 'not of woman born' and whose family Macbeth had ordered to be killed. <u>Macduff</u>



Tossup 7: Social Studies — World History

During this battle, a British fleet attempted to advance through a strait, only to be repulsed by a minefield. It featured multiple battles for Krithia, as well as the Battle of Sari Bair. Noted for the involvement of troops from New Zealand and Australia, one of the Turkish commanders was future president Mustafa Ataturk. Name this 1915 World War I battle.

Battle of Gallipoli (*accept Dardanelles Campaign*)

Bonus 7: Science — Physics

Identify these wave phenomena.

A Transverse waves can undergo this phenomenon where they oscillate in only one direction.

Polarization

B Light bends as it enters different media because of this phenomenon in which a wave changes direction because its speed changes.

Refraction

C When two waves are superimposed, they undergo this phenomenon in which a new wave is formed out of their sum.

Interference

D Prisms separate colors by this phenomenon, in which the phase velocity of a wave is different in a medium for different wavelengths.

Dispersion



Tossup 8: Literature — Literature

Reacting with disgust towards the criticisms of his two most famous novels, he eventually gave up novel writing entirely. His true love from then on was composing poetry such as "The Convergence of the Twain," about the sinking of the Titanic. On the last day of the 19th Century, he composed a poem about a hopeful bird singing in "The Darkling Thrush." Also notable for his creation of a semi-fictional region of England named Wessex, identify this author who famously used that locale in novels such as The Mayor of Casterbridge and Jude the Obscure.

Thomas Hardy

Bonus 8: Social Studies — Geography

Identify these Canadian bodies of water.

A	This river is the longest in Canada.	<u>Mackenzie River</u>
B	This lake in the Northwest Territories is the deepest in Canada.	<u>Great Slave Lake</u>
C	This lake is the largest by surface area entirely within Canada.	<u>Great Bear Lake</u>
D	This bay borders Manitoba, Ontario, and Quebec, and the Belcher Islands are found within its waters.	<u>Hudson Bay</u>



Tossup 9: Miscellaneous — Other

According to the Old Testament, these figures, considered a type of angel by some, support the throne of God. Though no actual description exists, Renaissance painters turned to depicting them in a manner similar to the Roman deity Cupid; that is, as baby-like with chubby, rosy faces, and of course, small wings. Name this group of angels.

Cherubim (*accept cherub or cherubs*)

Bonus 9: Math — Geometry

Give the number of sides that each of the following regular polygons have.

A	A regular polygon with side length 6 and perimeter 78.	<u>13</u>
B	A regular polygon whose external angles measure 20 degrees.	<u>18</u>
C	A regular polygon whose internal angles measure 135 degrees.	<u>8</u>
D	A regular polygon with 27 diagonals.	<u>9</u>



Tossup 10: Science — Biology

<p>With a name coming from the Greek for "hollow spine," this animal first appeared during the Devonian period. It has a rostral organ toward its front, which helps it detect electric signals of other fish. This order of fish only has one genus, Latimeria, and is the only type of lobe-finned fish other than lungfish. Name this class of ancient fish thought to be extinct until its rediscovery in 1938.</p>	<p><u>Coelacanth</u></p>
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Bonus 10: Miscellaneous — Technology

Name these web browsers.		
A	This browser by Microsoft is packaged with Windows.	Windows <u>Internet Explorer</u>
B	Once the most popular browser, this program lost the first browser war to Microsoft's browser, and after being purchased by AOL, was finally discontinued in late 2007.	<u>Netscape</u>
C	This newly-popular browser originally called Phoenix has about 16% of the current market share.	Mozilla <u>Firefox</u> (<i>do not accept <u>Mozilla</u></i>)
D	This browser created by Apple is included in Mac OS and iPhones.	<u>Safari</u>

END OF FIRST HALF – 2 minute timeout



Tossup 11: Social Studies — Other

<p>His 1906 work, “Studies in Word Association,” began a six-year period of collaboration between this man and Sigmund Freud. He continued some of Freud’s work, believing it was incomplete, which led to his idea of the anima and animus. He also was the first to use the terms “extravert” and “introvert” to explain an individual’s personality. Identify this Swiss psychologist, best known for his idea of the collective unconscious.</p>	<p>Karl Gustav <u>Jung</u> (<i>YOUNG</i>)</p>
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Bonus 11: Literature — Literature

<p>Identify the following about teachers and schools in literature.</p>		
<p>A</p>	<p>Holden Caulfield is expelled from this college preparatory school, in <i>The Catcher in the Rye</i>.</p>	<p><u>Pencey Prep</u></p>
<p>B</p>	<p>This titular schoolteacher at Brookfield is featured in a novel by James Hilton.</p>	<p><u>Mr. Chipping</u> (<i>also accept <u>Mr. Chips</u></i>)</p>
<p>C</p>	<p>This novel by John Knowles is set in the fictional Devon School.</p>	<p>A <u>Separate Peace</u></p>
<p>D</p>	<p>In Charlotte Brontë’s <i>Jane Eyre</i>, the title character attends and later teaches at this school.</p>	<p><u>Lowood School</u></p>



Tossup 12: Math — General

It can be easily derived from Euler's formula, though it can also be proven by induction using simple trigonometric identities. It is used to calculate roots of unity, and shows that they must be equally spaced around the unit circle. Name this formula named after a French mathematician, that links trigonometry and complex numbers, stating that cosine x plus i sine x , all raised to the n , equals cosine $n x$ plus i sine $n x$.

de Moivre('s) formula

Bonus 12: Fine Arts — Music

Given the following characters from operas, name the opera from which they come.

A	Rodolfo, Schaunard, and Musetta.	<u>La Boheme</u>
B	Leonore, Florestan, and Rocco.	<u>Fidelio</u>
C	The Marschallin, Sophie von Faninal, and the title character Octavian.	<u>Der Rosenkavalier</u>
D	Gilda, the Duke of Mantua, and his titular jester.	<u>Rigoletto</u>



Tossup 13: Miscellaneous — Entertainment

<p>Alec Baldwin was the first guest on this show on June 12, 1994. The second show saw a vast upgrade to Paul Newman, while Dustin Hoffman became guest number 200 in 2006. Presenting questions such as 'What is your favorite word?', and 'If heaven exists, what would you like to hear God say when you arrive at the Pearly Gates?' dramatically to guests, identify this A & E series hosted by James Lipton.</p>	<p><u>Inside the Actors Studio</u></p>
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Bonus 13: Science — Biology

<p>Living organisms are classified in one of three domains, which are one level above kingdoms. Identify these terms related to domains of living organisms.</p>		
A	<p>This American biologist proposed the current three-domain system in 1977.</p>	<p><u>Carl Woese</u></p>
B	<p>Most of the kingdoms are classified under domain Eukarya, because they are eukaryotes, unlike this group of organisms that don't have cell nuclei.</p>	<p><u>Prokaryotes</u></p>
C	<p>Another domain is Bacteria, which were once classified under this kingdom.</p>	<p><u>Monera</u></p>
D	<p>The last domain is this group of single-cell organisms which are often found in extreme environments.</p>	<p><u>Archaea</u> (<i>accept archaeobacteria</i>)</p>



Tossup 14: Literature — Literature

<p>After escaping death in the jungles of South America, he gets in a canoe and floats downstream. Along with his companion, he arrives in a land where the king treats his subjects as equals and the roads are paved with precious gems. Upon arriving in Suriname, his companion Cacambo travels to Buenos Aires to find Cunegonde (<i>koon-eh-gond</i>). Name this character, the titular protagonist of a 1759 work by Voltaire.</p>	<p><u>Candide</u></p>
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Bonus 14: Social Studies — World History

<p>Forced to sacrifice thousands of his own troops to defeat the Romans, King Pyrrhus reportedly said, "Another such victory...and we are undone." Answer these questions about other Pyrrhic victories.</p>		
<p>A</p>	<p>Confronted with the massive Persian army, King Leonidas of Sparta led a small force at this unwinnable battle that bought enough time for Athens to assemble its fleet.</p>	<p><u>Battle of Thermopylae</u></p>
<p>B</p>	<p>In 1879, the British suffered a devastating defeat at Isandlwana at the hands of this native South African tribe who were themselves decimated when British reinforcements arrived.</p>	<p><u>Zulu</u></p>
<p>C</p>	<p>Russia's weak resistance against Germany in 1941 can be partially attributed to the Soviet's 1940 "success" against this country in the Winter War, which destroyed thousands of Russian tanks, guns, and men.</p>	<p><u>Finland</u></p>
<p>D</p>	<p>Marking the first time in a century that a Chinese army defeated a Western one, the 1950 Battle of Chosin Reservoir in this war brought a Chinese victory through bloody, costly human wave attacks.</p>	<p><u>Korean War</u></p>



Tossup 15: Science — Physics

Vindicated by the presence of cosmic microwave background radiation, this theory can be derived through general relativity, though that breaks down at ten to the negative 43 seconds after this event. An alternative to Hoyle's "steady-state" theory of the universe, this theory states that the universe began as a very dense collection of matter and energy. Name this theory that the universe began with a namesake huge expansion of dense matter.

Big Bang theory

Bonus 15: Math — Algebra

Simplify the following expressions relating to logarithms. If a logarithm remains in the answer, it should only be a single logarithm of x , without any operations within the logarithm.

A	The log base 3 of 5, times the log base 5 of 3.	<u>1</u>
B	The log base 3 of 5, times the log base 5 of 7, times the log base 7 of 9.	<u>2</u>
C	The log base 5 of $25x$.	<u>2 + log base 5 of x</u>
D	The log base 4 of 4 to the x power.	<u>x</u>



Tossup 16: Social Studies — Geography

This body of water, named after a Dutch explorer, contains islands such as Norfolk Island and Ball's pyramid. First explored by James Cook in the 1770s, it lies directly south of the Coral Sea. Known for its bad weather, it separates Australia from New Zealand. Identify this body of water, with a name similar to an island just to its east.

Tasman Sea

Bonus 16: Miscellaneous — Other

Identify the following cities, given their nicknames.

A	Big Apple	<u>New York City, New York</u> <i>(accept NYC)</i>
B	Charm City	<u>Baltimore, Maryland</u>
C	Big Easy	<u>New Orleans, Louisiana</u>
D	Circle City	<u>Indianapolis, Indiana</u>



Tossup 17: Fine Arts — Visual Art

<p>The artist of this painting wrote “I have tried to express the terrible passions of humanity by means of red and green” in a letter to his brother Theo, and those two colors are featured prominently on the walls and ceiling in this work. The clock in the back of this work indicates the late hour, and five patrons can be seen slumping on small tables in the background. Featuring a central figure situated next to a pool table that appears to be sliding off the yellow floor, identify this van Gogh work about a title establishment.</p>	<p>The <u>Night Café</u> (accept <i>Le Café de nuit</i>)</p>
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Bonus 17: Literature — Literature

<p>Given a description, identify the following works by Russian authors.</p>		
<p>A</p>	<p>After a steeplechase race, the title character falls in love with Count Vronski, but ends up throwing herself under a train.</p>	<p><u>Anna Karenina</u></p>
<p>B</p>	<p>A broke law student kills a pawnbroker and her half-sister, and spends most of the novel contemplating either turning himself in or suicide.</p>	<p><u>Crime and Punishment</u></p>
<p>C</p>	<p>This work by Solzhenitsyn tells of the conditions of the Soviet forced labor camp system.</p>	<p><u>The Gulag Archipelago</u></p>
<p>D</p>	<p>Khlestakov pretends to be the title character, who arrives at the end, but all are fooled due to the eager mayor, Anton Antonovich.</p>	<p><u>The Inspector-General</u></p>



Tossup 18: Math — Other (Computational: 30 Seconds)

Your high school has a buzzer system with ten buzzers, two of which are broken. You fish out buzzers one at a time from your box, without putting each one back. What is the probability that you pull out five buzzers for a team, and exactly one of the buzzers is broken?	<u>5/9</u>
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Bonus 18: Science — Physics

Identify the following states of matter.		
A	This state of matter is made up of atoms closely packed together, in a rigid structure.	<u>Solid</u>
B	This state of matter is fluid, but unlike gases, is virtually incompressible.	<u>Liquid</u>
C	This state of matter is like gas, except it is composed of ions and electrons.	<u>Plasma</u>
D	This state of matter only exists near absolute zero, and consists of bosons all in the lowest quantum state.	<u>Bose-Einstein condensate</u>



Tossup 19: Science — Chemistry

First discovered in 1878 during work on coal tar, this food additive is often combined with cyclamate to offset its bitter aftertaste. Long suspected to be harmful, in 1972 the USDA attempted to ban it entirely, but by 2000, products containing it were no longer required to carry warning labels. Name this first artificial sweetener which is commonly sold as Sweet'N Low, and whose name with an ending "e" means "sweet."	<u>Saccharin</u>
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Bonus 19: Social Studies — U.S. History

Identify these related to the Watergate scandal.		
A	The scandal brought about the resignation of this President.	Richard Milhous <u>Nixon</u>
B	The story was broke by these two journalists.	Carl <u>Bernstein</u> and Robert "Bob" Upshur <u>Woodward</u>
C	The source those journalists used was Deep Throat, who in 2005 revealed himself to be this former member of the FBI.	William Mark <u>Felt</u>, Sr.
D	This Vice President under the answer to Part A was forced to resign because of charges of tax evasion, which some speculate was done to divert coverage of Watergate.	Spiro Theodore <u>Agnew</u>



Tossup 20: Literature — Mythology

<p>Only Apollodorus of Rhodes relays a story of him setting sail with the Argonauts, while Virgil and Ovid both write of him as the hero of his own myth, including his eventual death at the hands of Dionysus' Maenads. While with the Argonauts, this Thracian King and son of Calliope (<i>ka-lie-UH-pee</i>) managed to save them from the Sirens by drowning out their music with his own. A virtuoso at the lyre, identify this man, who made the mistake of looking back on the return trip from Hades to save his wife Eurydice (<i>yuh-RID-uh-see</i>).</p>	<p><u>Orpheus</u></p>
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Bonus 20: Math — Calculus

<p>Given some information about a function f of x at x equals 1, say what sort of point it is.</p>		
A	<p>f' at 1 equals zero.</p>	<p><u>Critical point</u> (<i>accept stationary point</i>)</p>
B	<p>f' at 1 equals 0, and f'' at 1 equals 2.</p>	<p><u>Local minimum</u></p>
C	<p>f' of x is negative when x is less than 1, f' at 1 is 0, and f' of x is positive when x is greater than 1.</p>	<p><u>Local minimum</u> (<i>accept global minimum</i>)</p>
D	<p>f'' of x changes sign at x equals 1.</p>	<p><u>Inflection point</u></p>

END OF MATCH



Tossup A: Science — Biology

<p>It assumes that no mutations are introduced, no members of the population migrate, and that mating is unaffected by the alleles in question. Derived by relating the probabilities of genotypes and phenotypes, one of its conclusions is that if p and q are allele frequencies, $2pq$ is the frequency of heterozygotes. Name this biological principle named after the two men who derived it.</p>	<p>Hardy-Weinberg principle <i>(accept <u>Hardy-Weinberg equilibrium</u>)</i></p>
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Bonus A: Social Studies — U.S. History

<p>Identify these facts related to Andrew Jackson.</p>		
<p>A</p>	<p>Jackson was the hero of this War of 1812 battle, even though the war had already been ended by a peace treaty.</p>	<p>Battle of <u>New Orleans</u></p>
<p>B</p>	<p>The Tariff of Abominations started this crisis that spurred Vice President John C. Calhoun to resign.</p>	<p><u>Nullification Crisis</u></p>
<p>C</p>	<p>This group of advisors, which included Martin Van Buren and John Overton, formed after the Crisis in Part B.</p>	<p><u>Kitchen Cabinet</u></p>
<p>D</p>	<p>This affair occurred when a Cabinet member married a woman after her husband committed suicide.</p>	<p><u>Peggy-Eaton Affair</u> <i>(prompt on Petticoat Affair)</i></p>



Tossup B: Fine Arts — Music

The University of Idaho's School of Music is named for this man; the only university music school named for a jazz musician. An original member of the Benny Goodman Quartet. His recording of Flying Home in 1939 is considered by some to be the earliest rock-and-roll recording. It was Louie Armstrong who suggested to him that he try what became his signature instrument because Louie knew he could play the xylophone. Identify this jazz legend who introduced the vibraphone as a jazz instrument.

Lionel Leo Hampton

Bonus B: Math — Other

You have a bag with four blue marbles, two yellow marbles, and two green marbles. What is the probability of the following events occurring?

A	You draw two blue marbles and then one yellow marble, without replacement.	<u>1/14</u>
B	You draw two non-yellow marbles and then two yellow marbles, without replacement.	<u>1/28</u>
C	You draw four blue marbles in a row, without replacement.	<u>1/70</u>
D	You draw four marbles, none of which are blue, without replacement.	<u>1/70</u>



Tossup C: Social Studies — U.S. History

<p>It was led by General Maxwell Taylor, who demanded 3 days and 3 nights of hard fighting. However, Taylor was not around when Brigadier General Anthony McAuliffe made his famous reply of "NUTS" to a German request for surrender. They were part of the futile fight in Holland as part of Operation Market Garden, though they are better known for being surrounded at Bastogne. Name this airborne division of the Army, nicknamed the "Screaming Eagles."</p>	<p><u>101st Airborne</u></p>
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Bonus C: Miscellaneous — Sports

<p>Men's college basketball had quite a few good freshmen this year. Given a description about one of them, name him.</p>		
<p>A</p>	<p>This Kansas State forward started off the year by averaging 30 points and 20 rebounds a game.</p>	<p>Michael <u>Beasley</u></p>
<p>B</p>	<p>This Memphis guard led Simeon Academy to a 2007 IHSA State Basketball Championship.</p>	<p>Derrick <u>Rose</u></p>
<p>C</p>	<p>This USC guard, who began playing high school basketball in 7th grade, was the top basketball recruit from West Virginia, and some rated him the top in the country.</p>	<p>Ovinton J'Anthony "O.J." <u>Mayo</u></p>
<p>D</p>	<p>This Indiana guard created waves as a high school senior when he decommitted from Illinois and committed to the in-state Hoosiers.</p>	<p>Eric "EJ" <u>Gordon, Jr.</u></p>



Tossup D: Literature — Literature

<p>The narrator of this novel is injured in an explosion at a paint factory. He is sent to work in the factory by Mr. Emerson, who reveals that letters of recommendation given to him are in fact letters telling of how the narrator disrespected his college. That disrespect comes when Mr. Norton is told of Jim Trueblood's incest. Identify this novel with an unnamed, persuasive narrator, written by Ralph Ellison.</p>	<p><u>Invisible Man</u></p>
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Bonus D: Science — Chemistry

Identify these terms related to solubility.		
A	The solubility of an ionic compound can be expressed as an equilibrium constant K with these two subscript letters.	<u>sp</u>
B	According to this effect, if two compounds which share an ion are dissolved together, they are less soluble than if they were dissolved separately.	<u>Common ion effect</u> (<i>prompt <u>Le Chatelier's principle</u></i>)
C	This law states that the solubility of a gas is proportional to the pressure of that gas above the liquid.	<u>Henry('s) law</u>
D	If this constant is above 10 for a solvent, it is considered polar because it can separate unlike charges in solution.	<u>Dielectric constant</u>



Tossup E: Math — Geometry (Computational: 30 Seconds)

You have concentric spheres of radius 3 and 6. The volume between the two spheres is equal to the volume of a cylinder with height 4. What is the radius of that cylinder?	<u>3 root 7</u>
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Bonus E: Literature — Mythology

Identify the following people that Zeus "came to" in different forms.		
A	She gave birth to the Dioskouroi as well as Helen of Troy as a result of her tryst with a swan-Zeus.	<u>Leda</u> (<i>do not accept Leto</i>)
B	Zeus stole this boy away to the heavens to be cupbearer to the gods in the guise of an eagle.	<u>Ganymede</u>
C	Coming to her as a golden rain, she was the mother of Perseus.	<u>Danaë</u>
D	This mother of Hercules was visited by Zeus who posed as her husband Amphitryon.	<u>Alcmene</u>