

# NEW TRIER SCOBOL SOLO 2011

## ROUND 12

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1. This number can be calculated using the Pippenger product, and the Lindemann-Weierstrass Theorem states that integer powers of this number are independent over the integers. It is the sum of the hyperbolic sine of one and the hyperbolic cosine of one, and raising this number to the power of  $i$  times  $x$  gives the cosine of  $x$  plus  $i$  times the sine of  $x$ . The exponential function with this number as its base is its own derivative, and this number is the limit of the quantity one plus one over  $x$ , end quantity, raised to the  $x$  power; as  $x$  approaches infinity. Give this number used as the base of natural logarithms.

ANSWER:  $e$  [or Euler's number; or Napier's constant; do not accept "Euler's constant"]

2. This poet wrote, "Let placid slumbers sooth each weary mind," in "A Hymn to the Evening", which follows "A Hymn to the Morning". This writer asks, "Where now shall I begin this spacious field," in the work "On Atheism". Another work by this author ends with the lines, "Thou tomb, shalt safe retain thy sacred trust, Till life divine re-animate his dust"; that is her elegy about George Whitefield. This poet of *Poems on Various Subjects, Religious and Moral* began another work, "Celestial choir! enthron'd in realms of light, Columbia's scenes of glorious toils I write." Name this writer of "To His Excellency, General Washington" who in 1761 was brought to the United States as a slave.

ANSWER: Phillis Wheatley

3. One member of this art movement, Charles Camoin, painted a portrait of another member, Albert Marquet (al-bair mar-kay), in addition to painting one of the two founders of this movement. That leader painted boats seen through an open window, *Landscape at Collioure* (coal-your), and *Woman with a Hat*. The other leader of this movement, who painted *Charing Cross Bridge* while on a trip to London funded by Ambroise Vollard, was André Derain. The first and more famous leader of this movement, who painted his wife with a green stripe down the middle of her face, was Henri Matisse (ahn-ree mah-tees). Name this early twentieth century movement known for using bright colors whose name is French for "wild beasts".

ANSWER: Les Fauves [or Fauvism; accept word forms; prompt on wild beasts]

4. In 1715 in this state, the killing of four British settlers at the Pocotaligo massacre led to the Yamasee War, and this was later the site of the Waxhaw Massacre during the Revolutionary War. When police fired guns into a crowd in 1968, a segregation protest in this state became known as the Orangeburg massacre. From 1954 to 2003, one of this state's Senators was Strom Thurmond. Vice President John Calhoun was from this state, and he supported it when it passed the Ordinance of Nullification in 1832. Name this state where the Civil War began at Fort Sumter, which is located in its Charleston Harbor.

ANSWER: South Carolina

5. Kurt Symanzik first suggested that this phenomenon's beta function was negative, and it forms the basis for the volume term in Weizsacker's (VAI-sak-uhr'z) formula. Hideki Yukawa used this phenomenon to predict the existence of pions ("PIE-ons"), and in high energy reactions this becomes weaker by the principle of asymptotic freedom. Color confinement between quarks is a result of this force, which only operates at distances less than ten to the minus fifteen meters, though it is able to overcome electromagnetic repulsion. Explained by quantum chromodynamics and mediated by particles called gluons, name this fundamental force that binds protons and neutrons together in the nucleus.

ANSWER: **strong** (nuclear) force [or **strong** interaction; accept **color** force before "Color"; accept **color** interaction before "Color"]

6. In one work by this writer, a prisoner argues that people should be concerned with behaving well and not with other people's opinions after the title character offers to help him escape. In another work by this writer, the title character, who is going to prosecute his father for murder, has a discussion with a man who is being prosecuted by Meletus. Another book by this author has the characters discuss different forms of government for the last three chapters. That work includes the theory of forms and the Allegory of the Cave. Those books are *Crito*, *Euthyphro*, and *The Republic*. Name this teacher of Aristotle and student of Socrates.

ANSWER: **Plato**

7. During this event, Clemens von Ketteler was killed and Sugiyama Akira was beheaded, and several of the people responsible for this event were later deported to Turkestan, a city currently located in Kazakhstan. A major part of this was the Siege of the Legations, which was put down by the Eight-Nation Alliance. Many of the people involved in this event believed that they would be assisted by spirit soldiers and that they could not be killed by bullets--those people belonged to the Society of Righteous and Harmonious Fists. Name this rebellion that ended in 1901 which unsuccessfully tried to reduce foreign influence in China.

ANSWER: **Boxer** Rebellion [accept logical equivalents for "Rebellion"; accept **Righteous Harmony** Society Movement before "Harmonious"]

8. Ostwald ripening can follow this type of reaction to generate larger particles, and this step follows electrolysis in the Hall-Heroult process. The electrostatic type of this reaction recovers valuable metals from industrial waste gases while supercritical fluids can be used as antisolvents for this. In classical qualitative analysis, the early addition of chloride and sulfide ions can detect silver and lead by this process, and this reaction typically occurs when a supersaturated solution is disturbed. Often resulting from a double displacement reaction, name this chemical process in which a dissolved substance forms a solid and settles out of solution.

ANSWER: **precipitation** reaction [accept word forms]

9. This author's first novel takes place in Nethermere and is narrated by Lettie Beardsall's brother Cyril. In another novel by this author, Gertrude Coppard grows distant from her husband Walter but becomes very close with her sons William and Paul Morel. This author also wrote about Gudrun and Ursula Brangwen in two books, the first of which was *The Rainbow*. This author also wrote a novel about an affair between a woman whose maiden name is Constance Reid and Oliver Mellors and a short story about a boy who wins money for his family by riding rocking horses. Name this author of *The White Peacock*, *Sons and Lovers*, *Women in Love*, and *Lady Chatterley's Lover*.

ANSWER: D(avid) H(erbert) **Lawrence**

10. This artist trained Paolo Uccello (PAO-loh oo-CHEH-loh) and Donatello, and towards the end of his life he cast a bronze St. John the Baptist and Saint Stephen for the Orsanmichele (OR-sahn-mee-KAY-lay) in Florence. His most famous creations followed up earlier works by Andrea (ahn-DRAY-uh) Pisano, first placing eight heroes from the New Testament below twenty scenes from the New Testament, and he followed that up by working for twenty-seven years on ten panels showing scenes from the Old Testament. Before working on those pieces, he had to win a competition over Filippo Brunelleschi. Name this artist who created what are commonly called *The Gates of Paradise*, two sets of doors for the Florence Baptistery.

ANSWER: Lorenzo Ghiberti

11. The extinct *Maclurites* of this class are a characteristic fossil of the Ordovician Period, and members of its genus *Murex* were long the source of the royal dye Tyrian purple. Some species in this class serve as intermediate hosts to the schistosomiasis (shis-tuh-soh-MAI-uh-sis) flukes that can infest rice paddies and all show unexpectedly asymmetric bodies due to torsion in the developing embryo. The most venomous creature in the ocean is the cone species from this class and members of its prosobranch subgroup can retract their bodies inside their mantle-secreted shells. Feeding with the aid of a toothed-organ called a radula, name this largest class of mollusks that includes the snails and slugs.

ANSWER: Gastropoda

12. This treaty eliminated the TREVI network, which fought international terrorism, radicalism, extremism, and violence, replacing that network with the Justice and Home Affairs pillar. That aspect of this treaty was soon altered by the Amsterdam Treaty, and other aspects were altered by the Treaty of Nice (nis) and three treaties of accession, the first of which dealt with Austria, Finland and Sweden. The United Kingdom negotiated out of its social chapter, and this treaty was initially rejected by a Danish referendum. This treaty established convergence criteria to determine which countries are allowed to enter the Economic and Monetary Union. Name this treaty signed in The Netherlands in 1992 which led to the creation of the euro.

ANSWER: Treaty of Maastricht [or Treaty on European Union; accept reasonable answers mentioning Maastricht and/or the European Union]

13. In addition to being considered an indirect proof method, modus tollens is also known as a proof by this type of statement. The relationship between this type of statement and an original statement is the same as the relationship between an inverse and a converse, and that relationship can be used to solve logic problems such as the ones in Lewis Carroll's book *Symbolic Logic*. If the original statement is that  $p$  implies  $q$ , then this statement is that not  $q$  implies not  $p$ . Name this statement that has the same truth value as the statement it is derived from.

ANSWER: contrapositive [accept contraposition]

14. This composer wrote a set of variations based on Beethoven's eighteenth piano sonata. He also wrote two works for Pablo de Sarasate (sah-rah-SAH-tay), his third violin concerto and a piece which stays on the E string for almost its entire second half, *Introduction and Rondo Capriccioso* (kuh-pree-chee-OH-soh). One piece by this composer tunes the E string to an E Flat, contains a devil's chord, and is set on Halloween evening. The eleventh movement of one collection by this composer sounds like two pianists practicing their scales; that collection's seventh movement uses a glass harmonica and is titled "The Aquarium". Name this composer of *Danse Macabre* and *The Carnival of the Animals*.

ANSWER: Camille Saint-Saëns (sain-sehn)

15. This character wanted to pummel the traitor Galalon and greatly admired Reynaldo of Montalvan. He makes a farmer swear an oath against harming a boy, and he is defeated by the Knight of the White Moon. This person believes that he drinks the Balsam of Fierbras and wears Mambrino's helmet. He names his horse Rocinante (roh-see-NAHN-tay), and when this man meets Aldonza Lorenzo, he falls in love with her and calls her Dulcinea del Toboso. His sidekick, who rides a mule named Dapple, is Sancho Panza. Name this character from La Mancha created by Miguel Cervantes.

ANSWER: Don Quixote of La Mancha [or Don Quijote de La Mancha; prompt on The Man of La Mancha]

16. Among the proposed explanations for these events are the hypothetical companion star Nemesis and the periodic disturbance of Oort cloud comets known as the Shiva hypothesis. A mass of 25 kilograms was a significant limit in the most recent of these events, and the largest may have been triggered by an eruption of the Siberian Traps. The evolution of inedible seed plants may have contributed to one of these events in the late Devonian, while Walter and Luis Alvarez used a worldwide iridium layer to suggest an asteroid theory for the K-T one. The formation of Pangaea probably caused the demise of sea scorpions and trilobites in the Permian-Triassic one of these events, also called the Great Dying. Occurring five times since the Cambrian period, name these events in which more than 50% of animal species disappear from the fossil record.

ANSWER: mass extinction-level events [accept reasonable equivalents that include extinct; accept biotic crisis; accept ELE]

17. This man arrived too late to participate in the Battle of Edgehill, and he and John Meldrum were only able to hold Gainsborough for a short time after defeating Charles Cavendish. He led the cavalry under Thomas Fairfax at the Battles of Langport and Naseby. His cavalry was supported by troops under Major General Leslie when this man temporarily left the field with a neck injury during the Battle of Marston Moor. This man's troops in the New Model Army took on his nickname of "Ironsides". Name this victor who led the Parliamentarians in the English Civil War and became first Lord Protector of the Commonwealth of England.

ANSWER: Oliver Cromwell

18. This city contains the tomb of Muñoz de Zamora in its Saint Sabina Basilica. This city is divided into regions such as Campitelli, where Carlo Rainaldi's Church of Saint Mary is located. The first wall to surround this city was called the Servian Wall, which was later replaced by the more expansive Aurelian Walls. One region of this city was once known as the English Ghetto; it contains a French church called Trinità dei Monti which is connected to the Piazza di Spagna by the Spanish Steps. This city also contains Nicola Salvi's Trevi Fountain as well as the Pantheon and its ancient Colosseum. Name this city that contains Vatican City, the capital of Italy.

ANSWER: Rome [or Roma]

19. This god gained his mount by promising it immortality. He once summoned that mount, the golden-feathered sun bird Garuda, to help one of his worshipers, but that worshiper helped himself before this god arrived. This god gives the advice "Stand up and win glory; conquer your enemies and enjoy an opulent kingdom" after his innumerable mouths destroy warriors in front of Arjuna in the *Bhagavad Gita*. This god is usually considered the second of the Trimurti, in charge of preservation, and he is very closely associated with Matsya the fish, Kalki, and Krishna. Name this god whose incarnations are known as avatars.

ANSWER: Vishnu [prompt on Krishna]

**20.** One character in this story, who wears jewelry her great-great-grandmother brought from Saardam, is the daughter of Baltus. The main character, who likes to sing psalms, is a teacher from Connecticut who is working near Greensburgh, which is also known as Tarry Town. Another character, whose favorite horse was Daredevil, was named Abraham Van Brunt, though he was seldom called by that name. After visiting Katrina Van Tassel, he is chased by what the local townspeople believe is a Hessian who died in battle. Name this story about the rivalry between Brom Bones and Ichabod Crane, written by Washington Irving.

ANSWER: "The Legend of Sleepy Hollow"

**TB1.** In an epic poem by this writer, a mother says "We have no power to fashion our children as it suits our will" after a father tells his son to forget about the woman he fell in love with while distributing donations to refugees. Another work by this writer was a love poem to a married woman named Marianne that he sent to her with a ginkgo leaf, and in addition to *Hermann and Dorothea*, this poet also wrote *The Sorcerer's Apprentice*. He also wrote a play largely in verse about a man whose illegitimate child is drowned by its mother Gretchen; the title character in that work will die when he experiences a moment he wants to stay in forever as part of a deal that character makes with Mephistopheles (meh-fi-STAH-feh-lees). Name this German writer of *Faust*.

ANSWER: Johann Wolfgang von Goethe [GOOR-tuh]

**TB2.** This President signed Executive Order 6102 restricting the ownership of gold, but it was supposed to be signed by his Treasury Secretary William Woodin. He appointed Hugo Black and Felix Frankfurter to the Supreme Court, and his advisers such Raymond Moley, Hugh Johnson, and Harry Hopkins became known as his Brain Trust. He was encouraged to sign the Wagner Act by his Secretary of Labor Frances Perkins. He submitted a bill to Congress that would have allowed Presidents to add Justices to the Supreme Court, and his Vice Presidents were John Nance Garner, Henry Wallace, and Harry Truman. Name this President who oversaw our entry into World War II, instituted the New Deal, and was elected four times.

ANSWER: Franklin Delano Roosevelt [or FDR]

**TB3.** Which animal...made its first appearance in Europe since Roman times in 1515, inspiring a famous Albrecht Durer woodcut; names a Eugene Ionesco play in which the people of a small French town turn into the title animal; and is currently endangered by poachers who harvest the horns on its nose for folk medicines?

ANSWER: rhinoceros