

2022 Reinstein Set – Packet 5

Tossups

1. This painter used the phrase “sea of blood” to describe his painting of Napoleon’s exile at St. Helena. This painter purposely contrasted that painting with a painting depicting his friend David Wilkie’s burial at sea by naming one of them *War* and the other one *Peace*. Another painting by this artist is set on the Maidenhead Railway Bridge on a very cloudy day. A close look at that painting reveals a rabbit trying to escape from the oncoming train, which belongs to the Great Western Railway. Name this British artist of *Rain, Steam, and Speed*.

Answer: J(oseph) M(allord) W(illiam) Turner

2. For Taylor polynomials, this quantity is equivalent to error and can be estimated using expressions named for Lagrange [luh-grahnzh] or Cauchy [koh-shee]. Little Bézout’s [beh-zoo’z] theorem, which is sometimes named for this quantity for polynomials, describes how to find this quantity by plugging a number into a polynomial. The modulo [MAH-dyoo-loh] operation is equivalent to finding this quantity from division. When synthetic division is performed, this number is written in the lower right corner. Name this number that arises when the division of whole numbers does not give a whole-number answer.

Answer: remainder(s)

3. In 2017, this company got into the sleep-tracking business by buying out Beddit Oy. This company acquired Emagic in 2002, so it is now the producer of the music synthesis software Logic Pro. This company also owns the rights to Adobe Premiere’s major competitor in video-editing, Final Cut Pro. For the last few years, this company has been the leading producer of smart watches, including the Series 6 that came out in 2020 and can monitor blood oxygen saturation. Name this company started by Steve Wozniak [WAHZ-nee-ak] and Steve Jobs that makes iPads.

Answer: Apple Inc. [accept Apple Computer Inc.]

4. One part of this battle was fought at the Blue Beach, which is not actually a beach, and at which there is now a small marker next to a gas station. A picture at this battle by Marguerite [mar-gur-reet] Higgins shows Baldomero [ball-doh-MER-oh] López leading troops shortly before he pulled a grenade under his body to protect them. Before this battle, allied troops bombed the Island of Wolmido [WOHL-mee-doh]. This attack was a major counteroffensive after allied forces had been pushed back to the Pusan [poo-SAHN] Perimeter. Name this September 1950 attack, supported by Douglas MacArthur, that led to the capture of Seoul in the Korean War.

Answer: Battle of **Inchon**

5. A thin layer of this element is used to coat astronauts' helmet visors to protect them from solar radiation. More than any other element, this one can be hammered into a flat shape without breaking, meaning that it is the most malleable [MAL-ee-uh-bull] metal. As with platinum, it is difficult to dissolve this element, but it can be dissolved with a mixture of nitric acid and hydrochloric ["hide"-roh-KLOR-ik] acid called aqua regia [REH-jee-uh]. Pyrite ["PIE-rite"] is nicknamed for its resemblance to this element, which "fools" might confuse it with. Name this element whose Latin name, *aurum*, inspires its symbol, Au [spell out].

Answer: **gold** [accept **Au** before "aurum"]

6. This king chose Maurepas [mor-pah] as his First Minister of State, who in turn chose Turgot [tur-goh] as comptroller general of finance. Turgot resigned as this king's comptroller after trying to end a system of unpaid labor called the corvée [kor-vay]. The Director of the Treasury under this king ignited an uproar by publishing the budget. That director, who inspired a mob when this king told him to leave the country, was Jacques Necker [zhahk nek-air]. This king eventually was forced to recognize the National Assembly. This king later tried to flee France but was caught. Name this husband of Marie Antoinette who was beheaded during the French Revolution.

Answer: **Louis XVI** [16] [or **Louis-Auguste**, duc de Berry; prompt on **Louis**]

7. In one novel by this author, the protagonist is offered a job as a school janitor but is then told to be a teacher because the school does not need a janitor. This author has his protagonist accept the job and marry Frieda, and the protagonist makes several attempts to contact Klammer. In a novella by this author, the protagonist tries to protect a picture he cut out of a magazine and framed that shows a woman wearing lots of fur. That protagonist is seen when he leaves his room to hear the violin being played by his sister Grete [GRET-tuh]. Name this author of *The Castle* who wrote about Gregor Samsa becoming a giant insect in *The Metamorphosis*.

Answer: Franz **Kafka**

8. This disease was the first one fought using human diploid [DIP-loyd] cell and purified-chick-embryo cell-culture vaccines, though most people are not vaccinated for it. The virus that causes this disease is the most widely known Lyssavirus [LIS-uh-“virus”]. The name of this disease comes from the Latin word for “madness” because it causes confusion and hallucinations. Because one of the symptoms of this disease is a paralysis of throat muscles leading to a fear of water, it used to be called hydrophobia. This disease causes excessive salivation, which is commonly called “foaming at the mouth”. Name this disease that is most commonly transmitted by an animal bite.

Answer: **rabies** [prompt on **hydrophobia** before it is mentioned]

9. This character states “Either my eyesight fails, or thou lookest pale” shortly after saying, “O God, I have an ill-divining soul.” Soon after that, this character tells her mother that she is not feeling well, which causes her mother to ask “Evermore weeping for your cousin’s death?”. Earlier on, this character says “What’s in a name? That which we call a rose by any other word would smell as sweet.” She speaks those words while standing at her window during the balcony scene. Name this William Shakespeare character who asks her lover “Wherefore art thou Romeo?”.

Answer: **Juliet** Capulet [prompt on **Capulet**]

10. When this person became U.S. Secretary of State, he worked out treaties with 29 countries to refer disputes to the Permanent International Commission. This person was Woodrow Wilson's first secretary of State, but he resigned after the *Lusitania* [loo-suh-TAY-nee-uh] was sunk because he wanted the U.S. to remain neutral. Just before he died, this person tried to uphold Tennessee's Butler Act by arguing a case against John Scopes, who was represented by Clarence Darrow. This person was the Democratic presidential nominee in 1896, 1900, and 1908. Name this politician and orator who delivered the Cross of Gold speech.

Answer: William Jennings **Bryan**

11. One way to predict which way this process is most likely to occur is the equal charge displacement hypothesis. This process was hypothesized in a paper by Ida Noddack [NOH-dak] and then later explained using the liquid-drop model by Lise Meitner [LEE-suh "MITE"-nur] and Meitner's nephew, Otto Frisch. This process sometimes leads to the release of delayed neutrons, but it more commonly releases prompt neutrons. This process is often at the center of chain reactions because it both is caused by neutrons and releases neutrons. Name this breaking up of a nucleus into lighter nuclei.

Answer: nuclear **fission** or atomic **fission** [prompt on descriptions such as **splitting** an atom; do not accept "fusion"]

12. A short story by this writer begins with two waiters discussing their only customer's past suicide attempt. That story, which is set at a cafe between 2 and 3 a.m., is "A Clean, Well-Lighted Place". In a novel by this author, Rinaldi introduces an American paramedic to an English nurse. This author set much of that novel in Milan during World War I. In another novel by this author, Manolin is the apprentice to a very unlucky fisherman. That unlucky fisherman catches a marlin, but it is devoured by sharks. Name this author of *A Farewell to Arms* and *The Old Man and the Sea*.

Answer: Ernest (Miller) **Hemingway**

13. There are several ways to classify the shapes of these objects, including **acicular** [uh-SIK-yoo-lur] and **subulate** [SOOB-yoo-lit]. Based on their shape, these structures can be classified as parallel, **pinnate** [“PIN-ate”], or **palmate** [“PALM-ate”]. These structures typically have a midvein running through them from the **petiole** [PET-ee-ohl] to the apex. The surfaces of these structures have guard cells that surround openings called **stomata** [stoh-MAH-tuh]. These structures, particularly in their **mesophyll** [MEZ-uh-fil], are where photosynthesis usually takes place. Name these structures that are usually green, though the ones on trees turn different colors in the autumn.

Answer: leaf(s) or leaves

14. According to one story, **Neith** [neeth] worked out a compromise in which the foreign goddess **Astarte** [uh-“STAR-tee”] became a consort of this god. **Peribsen** [PEER-ib-sen] associated himself with this god, which was unusual for pharaohs. In some sources, this god is merged with **Apophis** [AY-puh-fiss], while in other sources this god is very strong and protects Ra from Apophis. The animal associated with this god looks similar to a jackal but is not a real animal. This god of disorder controlled the desert after losing a competition against his nephew. Name this husband of **Nephthys** [NEFF-thiss] whose stone boat sank, causing him to lose a race to Horus.

Answer: Seth

15. In a short story by this writer, a man asks a woman what man was made for, while the woman wonders if a one-armed man can put a roof on her garden house. In that story, this author wrote about Tom Shiftlet marrying and then abandoning Lucynell Crater, who is deaf and mute. This author of “The Life You Save May Be Your Own” wrote a story that ends with a character stating “Shut up, Bobby Lee, it’s no real pleasure in life.” Those words are spoken by the man who kills Grandmother after her family tries taking a road trip from Georgia. Name this author who wrote about The Misfit in “A Good Man Is Hard to Find”.

Answer: (Mary) Flannery O’Connor

16. This leader told the United Nations “We Africans will fight, if necessary, and we know that we shall win, as we are confident in the victory of good over evil.” This person’s leadership ended when he was deposed by a group of military officers called the Derg. From 1936 to 1941, this leader lived outside of his country because it was occupied by Italy during what became known as the **Abyssinia** [ab-uh-SIN-ee-uh] Crisis. This person was nicknamed the “Lion of Judah” and was considered a messiah by some Jamaicans. Name this person who from 1930 to 1974 was the emperor of Ethiopia.

Answer: **Haile Selassie** [“highly” suh-LASS-ee] (I) [or Lij **Tafari** Makonnen or Ras **Tafari**]

17. One poem by this writer states “O my love is like the melody that’s sweetly played in tune.” That poem was part of a major effort by this writer to preserve traditional songs. Another work from that effort begins “Little, cunning, cowering, timorous beast”. In that work, this poet mentioned “the best-laid schemes”, saying that they “Go often askew”. A song by this poet contains the line “We’ll take a cup of kindness yet” and is often sung at the new year. Name this Scottish poet who wrote “A Red, Red Rose”, “To a Mouse”, and “Auld Lang Syne”.

Answer: Robert **Burns**

18. This lake is the largest remnant of the Pamlico Sea. This lake is just west of the historic site Big Mound City, which is in the J. W. Corbett Wildlife Management Area near the **DuPuis** [doo-pwee] Management Area. Some of the locations near this lake are named for the Mayaca and Belle Glade cultures that lived near it. This lake is fed by the Kissimmee River. One of the attempts to decrease flooding from this lake was the construction of the Saint Lucie Canal, which leads to the Gulf of Mexico. This lake is west of Palm Beach and at the north end of the Everglades. Name this large lake in Florida.

Answer: Lake **Okeechobee** [oh-kee-CHOH-bee]

19. The **Stefan-Boltzmann** [STEh-fun “BOLTS”-mun] law can be verified by integrating this person’s law with respect to frequency. Under different limited circumstances, this person’s law gives approximately the same values as the Rayleigh-Jeans law and the **Wien** [veen] approximation. This person’s law gives the spectral density, which is power versus frequency, of radiation emitted by an ideal absorber called a black body. The constant named for this person gives the ratio of energy to frequency for a photon and is equal to about 6 times 10 to the -34 th joule-seconds. Name this physicist whose constant is often represented by a lowercase h .

Answer: Max **Planck** [accept **Planck**’s law or **Planck**’s constant]

20. This composer wrote a collection of six keyboard **arias** [AR-ee-uhz] with variations, ending with an aria nicknamed *Sebaldina* [seh-bahl-DEE-nah]. That work, which surprisingly ends in F minor rather than B-flat major, is this composer's *Hexachordum Apollinis* [hek-suh-KOR-dum ah-POH-lee-nees]. Another work by this composer has a set of 16 quarter notes, with six falling, then three rising, then five falling, then a G and an E. This composer originally wrote that piece for three violins and a basso continuo, with the violins playing the same notes two measures apart from each other. That piece is now often performed at weddings. Name this 17th-century German composer of *Canon in D*.

Answer: Johann **Pachelbel** [PAHK-ull-bell]

21. **Poincaré** [pwan-kar-ay] models allow for “ultra-” and “limiting” versions of this concept. Those alternative types of this concept occur generally in hyperbolic geometry. Playfair's axiom is equivalent to the postulate named for this property, which is the last of **Euclid's** [YOO-klid'z] five postulates. Playfair's axiom, which is sometimes mistakenly described as the postulate named for this property, states that given a line and a point not on it, there is exactly one line through the point with this property relative to the original line. If two lines have the same slope, they also have this property. Name this property of lines that go in the same direction.

Answer: **parallel**(ism) or being **parallel** or **parallel** lines

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Bonuses

1. Answer the following about the human spine:

A. It is made up of 33 of these bones.

Answer: vertebrae [accept vertebras]

B. Five of the vertebrae are fused to form this bone that combines with the hip bones to form the pelvis. This bone is just above the **coccyx** [“COCK-six”].

Answer: **sacrum**(s) [**SAK-rum**] [accept **sacra**]

C. These five vertebrae are just above the sacrum.

Answer: lumbar vertebrae

2. The FBI is part of this cabinet-level department.

A. Name this department whose head is the Attorney General.

Answer: Department of **Justice** [or **Justice** Department; prompt on **DoJ**]

B. This division within the Department of Justice is in charge of enforcing federal statutes prohibiting discrimination.

Answer: Civil Rights Division

C. This position within the Department of Justice is responsible for supervising and conducting government litigation in the United States Supreme Court.

Answer: Solicitor General of the United States

3. This operation can be understood as repeated multiplication.

A. Name this operation usually written by putting a number or expression as a superscript.

Answer: exponentiation (accept taking powers)

B. Find the value of 8 raised to the $4/3$ power.

Answer: 16

C. The inverse of an exponential function is a logarithmic function. Find the logarithm, base 16, of 4.

Answer: 1/2 or 0.5

4. The Episcopal Churches in the United States and Scotland began as part of this church.

A. Name this Protestant religion that started as the Church of England.

Answer: Anglican Church [accept Anglicanism or Anglican Communion]

B. This position, also referred to as Primate of All England, is generally considered the highest position in the Anglican Communion, though this position does not have legal authority over member churches.

Answer: (Lord) Archbishop of Canterbury [prompt on partial answer]

C. Anglican leaders gather at this conference approximately every 10 years. This conference is named for the London borough between Wandsworth and **Southwark** [SUTH-urk].

Answer: Lambeth Conference

5. This person's uniform number 42 is retired from baseball except on April 15, when everybody wears it.

A. Name this first African-American person to play Major League Baseball in the 20th century.

Answer: (Jack Roosevelt) "Jackie" Robinson

B. This Brooklyn Dodgers general manager signed Robinson to a contract in 1945. Robinson made it to the majors in 1947 and was the National League Rookie of the Year.

Answer: (Wesley) Branch Rickey

C. In 1956, this woman became the first African-American person to win a tennis Grand Slam title. She later integrated professional women's golf.

Answer: Althea (Neale) Gibson

6. This character asks "What is the use of a book without pictures or conversations?".

A. Name this girl who falls down a hole and finds a little bottle with a label saying "Drink me". She drinks from the bottle because it is not labeled "Poison".

Answer: Alice

B. Give the pen name used by Charles Dodgson when he wrote *Alice's Adventures in Wonderland*.

Answer: Lewis Carroll

C. The Queen of Hearts asks Alice if she has seen this animal, but Alice responds that she does not know what this animal is. This creature and the Gryphon dance to the Lobster Quadrille.

Answer: Mock Turtle [prompt on turtle]

7. This U.S. president gave a speech at the Berlin Wall during which he said “Tear down this wall!”.

A. Name this president who won the elections of 1980 and 1984 by wide margins.

Answer: Ronald (Wilson) **Reagan**

B. In 1986, President Reagan ordered the bombing of this country. This country claimed that one of the people killed was the daughter of its leader, **Muammar Gaddafi** [MOO-ah-mar gah-DAH-fee].

Answer: (State of) **Libya** or (Dawlat) **Libiya**

C. While in office, Reagan pushed for the development of this system—nicknamed “Star Wars”—that would block nuclear missiles. It was researched but never implemented.

Answer: **Strategic Defense Initiative** or **SDI**

8. Elvin Jones played this instrument in the John Coltrane quartet.

A. Name this percussion instrument that is typically played in a set with cymbals.

Answer: **drums** or **drum** kit or **drum** set [or **traps** or **trap** kit or **trap** set]

B. This drummer led the Jazz Messengers for many years. He was the drummer on the album *Moanin’*.

Answer: Art(hur) **Blakey**

C. Blakey was considered the leader in the hard type of this kind of jazz with a three-letter name.

Answer: **bop**

9. This person wrote the book *The Origin of Continents and Oceans*.

A. Name this person credited with the theories of tectonic plates and continental drift.

Answer: Alfred **Wegener** [VAY-guh-nur]

B. Wegener gave this name to the supercontinent that existed 300 million years ago and was surrounded by the ocean **Panthalassa** [pan-thuh-LASS-uh].

Answer: **Pangaea** [pan-JEE-uh]

C. Support for Wegener’s theories grew decades after his death with the study of these zones with many earthquakes that are named after a Japanese and an American scientist.

Answer: **Wadati-Benioff** seismic zones [accept names in either order]

10. William Pitt the Elder and Lord North served as prime minister under this king.

A. Name this king of Great Britain during the American Revolutionary War.

Answer: **George III** [prompt on **George**]

B. George III allied Britain with Prussia to win this war that was fought at the same time as the French and Indian War, Third Silesian War, and Third Carnatic War.

Answer: **Seven Years'** War

C. This Irish member of parliament was very critical of George III's treatment of the American colonies in his "American Taxation" and "Conciliation with America" speeches.

Answer: Edmund **Burke**

11. This sculpture was originally part of a work showing scenes from the *Inferno*.

A. Name this sculpture that represented Dante [DAH-N-tay] and was part of *The Gates of Hell*.

Answer: *The* **Thinker** [or *Le* **Penseur**]

B. This French artist sculpted *The Thinker*.

Answer: (François) Auguste (René) **Rodin** [oh-goost roh-dan]

C. Rodin had a relationship with this woman who was his student and model. She sculpted *The Waltz* and *The Mature Age*.

Answer: Camille (Rosalie) **Claudel**

12. The asymptotes ["ASS-imp-totes"] on the graph of this function are the same as the asymptotes on the graph of the co-tangent function.

A. Name this reciprocal of the sine function.

Answer: **co-secant** function [accept **csc**; do not prompt on "secant"; accept answers that additionally mention a variable]

B. Find the smallest positive input that causes the cosecant function to be undefined. Give your answer in radians.

Answer: (one) **pi** [do not accept any other number times pi]

C. Find the smallest positive x -intercept of the graph of " y equals -2 plus the cosecant of x ". Again, give your answer in radians.

Answer: **pi over 6** or **1/6 pi** [accept either answer followed by zero]

13. This country's first supreme leader was Kim Il-sung.

A. Name this communist country that is between China and the Demilitarized Zone.

Answer: **North Korea** [or **Democratic People's Republic of Korea** or **DPRK** or **Choson**; prompt on **Korea**; do not accept "Republic of Korea" or "South Korea"]

B. In 1968, North Korea captured this U.S. ship and held the crew hostage for 11 months.

Answer: USS ***Pueblo***

C. In 1985, North Korea announced that it would join this treaty, though it was not in compliance and withdrew in 2003. There are 190 other countries that have joined this treaty.

Answer: **Non Proliferation** of Nuclear Weapons [or Nuclear **Non Proliferation** or **NPT**]

14. Water is called the "universal" substance of this type.

A. Give this term for a liquid in which a **solute** [SAHL-yoot] is dissolved.

Answer: **solvent**

B. This compound with chemical formula C_6H_6 ["C six H six"] used to be a common solvent, but its use has largely been replaced by **toluene** [TAHL-yoo-een] because this compound causes cancer.

Answer: **benzene**

C. Many alcohols are used as solvents, including this one with chemical formula C_3H_8O ["C three H eight O"] that is commonly used as rubbing alcohol.

Answer: **isopropyl** alcohol [or **propan-2-ol** or **isopropanol** or **2-propanol**]

15. Much of this novel is about the twins Estha and Rahel.

A. Name this novel in which an untouchable named **Velutha** [veh-LOO-thuh] is killed after having an affair with Ammu.

Answer: *The* **God of Small Things**

B. This author wrote *The God of Small Things* and *The Ministry of Utmost Happiness*.

Answer: **Arundhati** [uh-ROON-duh-tee] **Roy**

C. *The God of Small Things* shows the negative consequences of the caste system in this country where Arundhati Roy lives.

Answer: (Republic of) **India** [or **Bharat** Ganarajya]

16. These cells are controversial because they are sometimes taken from embryos that were a few days old.

A. Name these undifferentiated cells that can develop into a variety of different cells, though there are some limits to that ability when these cells are taken from adults.

Answer: stem cells

B. This term describes the ability of stem cells to become several different cell types.

Answer: pluripotency [PLUR-ih-“potency”] or pluripotent stem cells

C. Stem cells have been used to grow these mice that have an inactivated gene.

Answer: knockout mice

17. One of the characters in this novel storms out of the room after saying “I shall be as dirty as I please: and I like to be dirty, and I will be dirty.”

A. Name this novel in which Heathcliff gets upset after being compared to the Linton children.

Answer: *Wuthering Heights*

B. Name the author of *Wuthering Heights*. Her sisters Charlotte and Anne also wrote.

Answer: Emily Brontë [accept Ellis Bell; prompt on Emily or Brontë or Ellis or Bell]

C. In *Wuthering Heights*, Lockwood finds this first name scratched into paint, followed by three different last names.

Answer: Catherine [do not accept variants]

18. With this type of variation, the value of one variable goes up when another goes down.

A. Identify this type of variation expressed as “ y equals k over x ”, where k is a constant.

Answer: inverse variation or varying inversely or indirect variation or varying indirectly [do not prompt on “direct”]

B. If y varies inversely with x , and y equals 10 when x equals 5, find the value of y when x equals 1.

Answer: 50

C. If y varies inversely with x squared, and y equals 10 when x equals 5, find the value of y when x equals 1.

Answer: 250

19. The speaker of this poem tells inanimate objects “Stay where you are until our backs are turned!”.

A. Name this poem that ends with the quote “Good fences make good neighbors.”

Answer: “**Mending Wall**”

B. This American poet wrote “Mending Wall”. He read his poem “The Gift Outright” at President Kennedy’s inauguration.

Answer: Robert (Lee) **Frost**

C. What is the last word in Robert Frost’s poem “The Road Not Taken”? The rest of the line is “And that has made all the...”

Answer: **difference**

20. In this type of circuit, the power source supplies electromotive force that forms a sine wave when graphed against time.

A. Name this type of circuit contrasted with a direct current circuit.

Answer: **alternating**-current circuit or **AC** circuit

B. Alternating current allows voltage to be stepped up or down using one of these devices that contains primary and secondary windings.

Answer: **transformers**

C. The voltage in an alternating current circuit is often calculated using this type of average. For a sine wave, its result is the amplitude over the square root of 2.

Answer: **root-mean-square** average or **RMS** average