1. The title girl of this book's chapter Zoya declares "you can't hang all 190 million of us" as she is executed for arson. Another of its characters is Kurt Gerstein, who kills himself after failing to sabotage shipments of Zyklon B. It opens with a description of a "squat black telephone," which it compares to an octopus. Its chapter "A Pianist from Kilgore" describes van Cliburn winning the Tchaikovsky prize. This book consists of eighteen paired stories, which are labelled "Pincer Movements" and which frequently concern the relationship between the filmmaker Roman Karmen, his wife Elena Konstantinovskaya, and the composer Dmitri Shostakovich. Its prologue, "Steel in Motion," describes a metaphorical telephone exchange system that links its vast array of characters across the 20th century in Germany and the Soviet Union. For 10 points, name this 2005 novel by William T. Vollmann.
ANSWER: **_Europe Central_**

2. This doctrine is popularly encapsulated in a rhyming couplet written by Lorenzo Snow and it was first formally stated in the King Follet sermon. To undergo this process, an adherent must first undergo the Endowment ceremony and have a marriage that is sealed in the temple. A now-repudiated doctrine stated that Adam underwent this process and now rules Kolob. Those who undergo this process are famously given their own planet to populate and rule. For 10 points, name this Mormon doctrine which states that as God is, man may become.
ANSWER: **Exaltation** [accept eternal progression, deification, godhood, other answers that are clearly about Mormons becoming gods; prompt on "Celestial Kingdom"]

3. This poet wrote about looking at the stars "forty-two years ago" in his poem "Star-Gazer." One his poems opens "It's no go the merry-go-round, it's no o the rickshaw, all we want is a limousine and a ticket for the peepshow." The speaker of one poem by this man says "I peel and portion a tangerine and spit the pips and feel the drunkenness of things being various." This poet of "Bagpipe Music" described Ireland as "a nation built upon violence and morose vendettas" in *Autumn Journal* and wrote about "the drunkenness of things being various" in his poem "Snow." He collaborated with Benjamin Britten on his radio verse play *The Dark Tower*, and collaborated with W.H. Auden on the travelogue *Letters from Iceland*. For10 points, name this Irish-born poet who is often grouped with Stephen Spender, W.H. Auden, and Cecil Day-Lewis.
ANSWER: Louis **MacNeice**

4. Notable opposition to this program came from John Battle, who testified before the House Committee on Military Affairs that this program could put 400,000 people out of work. The agency charged with carrying out this program was created via Executive Order 7037, under the auspices of the Emergency Relief Appropriation Act. This program was carried out by an agency led by Morris Llewellyn Cooke, who was replaced by John Carmody a year after being appointed to head that agency. This program was funded by a $410 million appropriation via the Norris-Rayburn Act, which provided a loan system for private cooperatives and companies, such as Arkanasas' Woodruff Cooperative. In 1949, the agency charged with executing this program had its mandate extended to telephone service. Originating with the Tennessee Valley Authority, for 10 points, identify this program which aimed to bring power to Americans living outside of cities.
ANSWER: **rural electrification**

5. This article was criticized by Peter Bernholz by claiming that because the problem it was addressing was a constitutional question, and because that problem cannot be solved without comparing the costs of

different decision rules, this article's assumption of unrestricted domain was unjustified. In a 1996 article, James Buchanan argued that the main rule outlined in this article was self-contradictory, and criticized this article's author for not addressing the assignment or the starting-point problem, claiming that its results "seem more significant than they are because of the fundamental confusion between the evaluation of complete social states and the evaluation of elements within these states." This article, which was extended by its author in a later work titled "Liberty, Unanimity, and Rights," uses a thought experiment involving the preferences of two different people regarding the reading of *Lady Chatelier's Lover* to illustrate its central point about the incompatibility of the U, P, and L conditions. For 10 points, identify this article which argues that a conflict exists between individual liberty and a certain type of efficiency, written by Amartya Sen.
ANSWER: The **Impossibility of a Paretian Liberal**

6. One work in this series depicts a man in the lower left corner eyeing four voluptuous prostitutes, one of whom wears a floppy hat with a feather in it. That theme is reprised in another work in this series, which depicts a man during a visit to "Madame Germaine's in Mericourt," and this series also contains a work that shows two men with buckets in their teeth crawling in the foreground as the sun is seen rising in the background. The first work in this series depicts a cross in the very center over a grave, while another work depicts two medics looking at a row of corpses with blackened faces. Perhaps the most famous work in this series depicts one of its five title figures with an arm raised to throw a grenade as the rest of them move forward, all wearing gas masks, and is titled *Stormtroopers advancing under gas*. Modeled on the *Los Desastres* series by Goya, for 10 points, identify this cycle of 51 prints depicting the horrors of the title event, created by Otto Dix.
ANSWER: The **War** or Der **Krieg**

7. Culberson and Luo developed the MAXIS algorithm to calculate this quantity, which works by dividing the target domain into maximally independent sets. An algorithm for calculating this quantity, unrelated to the traveling salesman problem, was developed by Nicos Christofides, while the Brelaz DSATUR heuristic is also used to calculate this quantity, though it does not guarantee minimality. A theorem which gives the upper bound of this quantity as either the maximum degree delta, or one plus delta, was proven by Brooks, while Konig's theorem sets this quantity equal to or less than two if the corresponding structure has no odd cycles. According to a theorem proved by Appel and Haken, this quantity is equal to four for a plane separated into contiguous regions. For 10 points, identify this quantity which represents the smallest number of distinct colors needed to color a graph so that no two vertices have the same color.
ANSWER: **chromatic** number [prompt on "gamma" I guess]

8. In one scene in this film, a row of men stand holding guns with their backs to a row of targets, at which they turn and shoot in order. One a character describes a game in which cards are laid out and the goal is to not pick up the last remaining card, and in subsequent scenes this game is played again with matches and dominoes. A famous shot from this film shows a garden scene in which only the humans, and not the trees, cast shadows, while another sequence depicts the camera advancing several times into the arms of a woman wearing a white robe, who in another sequence that may represent an alternate memory is shot to death by a man called M. This film's famous opening sequence consists of narration that imagines advancing through "corridors, salons, galleries," as the camera advances through the labyrinthine interior of an ornate hotel, and its title references the location and time of a previous alleged meeting between a man knowns as X, and a woman called A. For 10 points identify this film with a screenplay written by Robbe-Grillet and directed Alain Resnais.
ANSWER: **Last Year at Marienbad** or L'**Annee dernier a Marienbad**

9. One section of this document proposes a seven-hour workday, with a military-style system of three-and-a-half-hour shifts over the course of 14 hours during the day. This work proposes the creation of a joint stock company "subject to English jurisdiction," which would be involved in land acquisition and construction of workmen's dwellings. A latter section of this work envisages that the middle classes will naturally be drawn into its title venture, which is to be formed on the principle of *negotiorum gestio*. This work debates between two locations for its title institution, one of which is Argentina, but suggests that if "His Majesty, the Sultan" were to allocate land for that institution, then "we could in turn undertake to regulate the whole finances of Turkey," and "form… a rampart of Europe against Asia," in the preferred location, Palestine. For 10 points, identify this 1896 work presented a year after its publication at the Congress of Basle, a plan for the founding of the title country written up by Theodor Herzl.
ANSWER: The **Jewish State** or Der **Judenstaat**

10. A member of this protein family crystallized by Kaspar Locher, Allen Lee, and Douglas Rees was the first member to have its crystal structure determined and is the *E. coli* protein BtuCD. The glycoprotein tapasin mediates the interaction between another member of this family and MHC I molecules; that member is TAP. The B1, C1, and G2 members of this protein family are responsible for the vast majority of multidrug resistant tumor cells. Important motifs in this family include the P-loop, Walker B motif, Q-loop, H-motif, and their namesake signature motif. Mutations in another member of this family that transfers fatty acids to peroxisomes causes adrenoleukodystrophy. A mutation in CFTR, yet another member of this family, causes cystic fibrosis. For 10 points, identify this largest family of transmembrane proteins that use the energy from binding and hydrolyzing ATP to transport molecules.
ANSWER: **ABC** transporter [or **ATP-binding cassette** transporter; or obvious equivalents for "transporter", such as "protein" or "transmembrane protein"; prompt on intracellular ligand-gated **ion channel**s]

11.

12. In the *Heidreks saga*, a man named Gestumblindi engages in one of these events during the course of a trial before King Heidrek, which all supplicants to the king are required to do. One of these events occurs in the *Grimnismal*, and ends up causing the succession of Agnar after the king Geirrod accidentally falls on his sword at the end of that event. Another of these events is initiated when neither of its participants will yield to the other on a road; as a result of that event, one participant winds up waist-deep in a bog, and is forced to offer his sister as ransom. In addition to that event involving Joukahainen and Vainamoinen, another of these events involves a man masquerading as Gagnrad, who ends that instance of this event by asking what the All-Father whispered into Balder's ear on the pyre, which leads the other participant to realize he has been speaking with Odin; that event is detailed in the *Vafthrudnirsmal*. For 10 points, identify these events common in Nordic myth, in which two participants pit their mental skills against each other.
ANSWER: **wisdom** contest or **singing** contest

13. One ruler of this empire delegated most of his authority to his son, who used his fortress at Udayagiri to conduct a 25-year-long campaign against the Reddi kings of Kondavidu whose territory lay north of this empire. This empire's king Bukka I expelled Muslims from Madurai, and its king Devaraya II pacified the Gajapati region and recruited Muslim mercenaries, even building them a mosque in his capital. This empire's ruling lineages included one founded by the general Saluva Narasimha, as well as the Sangama family, named after the brothers who founded this empire; the elder of those brothers was its first king, Harihara I. This empire, which reached its zenith under Krishnadevaraya, took its name from its capital on

the Tungabhadra River, which was modeled after the Chalukyan capitals of Vatapi and Aihole, and whose name means "City of Victory." Eventually conquered by Bijapur, for 10 points, identify this Kannada- and Telugu-speaking empire based in the Deccan plateau, which controlled the southern portion of the Indian subcontinent from the mid-14th to the mid-17th centuries.
ANSWER: **Vijayanagara**

14. A "pulsed" form of this process was developed by Tuomo Suntola, ALD. One supplies an RF voltage and places the wafer on the larger, grounded electrode in the plasma enhanced form of this process. The metal organic form of this process is used to grow III-V semiconductor heterojunctions, such as those used in MODFETs/HEMTs. Systems used for this process can be categorized into two major types: hot wall and cold wall. The low pressure form of this process reduces the thermal cycling of a wafer and is usually used to create a silicon nitride layer. For 10 points, name this process for growing thin films in which chemicals are supplied in a vapor form, a faster, more coarse alternative to molecular beam epitaxy.
ANSWER: **CVD** [or **chemical vapor deposition**; reverse prompt on **epitaxy** or word forms thereof]

15. This thinker argued that the title type of book succeeds because it satisfies a need in the readers, many of whom "strive to avoid the confrontation of outdated ideals with contemporary social reality," in another essay, titled "On Bestsellers and Their Audience." In another work, this thinker argued that the Tiller Girls represent a change in the "body culture," and constitute a "linear system" which no longer has any "erotic meaning, but at best points to the locus of the erotic." In addition to the collection which contains those essays, and which shares its name with the latter, titled *The Mass Ornament*, this thinker argued that the title work of art spawned depictions of both tyrants and "mute chaos," and traced the history of a certain art form "from *Caligari* to Hitler." This thinker's magnum opus offered what he called a "material aesthetics" of the title art for, and operated on the assumption that this form was "essentially an extension of photography," and "come[s] into its own when [it] record[s] and reveal[s] physical reality." For 10 points, identify this erstwhile member of the Frankfurt school who wrote *Theory of Film*.
ANSWER: Siegfried **Kracauer**

16. This quantity can be calculated by summing over expectation values of the velocity operator applied to the Bloch functions in accordance with its namesake theorem. Near the Fermi level, this quantity is slightly altered by the phonon correction resulting from ionic screening, and one way of measuring this quantity is to vary the temperature for a fixed field and measure the amplitude of the oscillations from the de Haas-van Alphen effect. The standard way of measuring this quantity is through cyclotron resonance, since a measurement of the cyclotron frequency in a known magnetic field directly yields this quantity. This quantity can counterintuitively be negative at the bottom of a band because the band there has upward curvature. Defined as the inverse of h-bar squared times the second derivative of the energy with respect to wavenumber, for 10 points, identify this quantity from solid-state theory which causes electrons in lattices to behave as though they were either lighter or heavier.
ANSWER: **effective mass** [prompt on partial answers]

17.

18. One character in this work apostrophizes a concept that saves "mad mortals" from themselves, for which he uses a metaphor of steering between two rocks. Earlier in this work, repeated dotted rhythms represent "the cricket on the hearth". An exhortation by the chorus that "young and old come out to play" occurs in the subdominant key of a soprano aria that refers to "many a youth and many a maid dancing in the checquer'd shade". That aria features the carillon, which this work's composer also used in

Saul. Three different recitatives in this work end with the line "Mirth, admit me of thy crew", and the first one begins, "Hence, loathed Melancholy!" Its composer used the minor mode to set the line "Lap me in soft Lydian airs", and this work also contains the duet "As steals the morn". For 10 points, name this Handel work, whose libretto adds a third title figure to the eponymous pair of contrasting poems with Italian titles by John Milton.
ANSWER: L'**allegro**, il penseroso, ed il moderato [or "pensieroso" in place of "penseroso"]

19. The protagonist of this novel cries upon hearing the aria "Una Furtiva Lacrima" because it is the only beautiful thing in her life. That protagonist loves listening to a radio station called "Radio Clock" and wets herself after seeing a rhinoceros in the zoo. In this novel, Olimpico starts going out with his co-worker Julia, prompting its protagonist to visit the fortune teller Madame Carlotta. That fortune teller predicts she will marry a rich foreigner named Hans, but turns out to be wrong when the protagonist is hit by a car and slowly dies. Its protagonist is an incompetent typist who lives with four other girls and is obsessed with Coca-Cola and Marilyn Monroe. The narrator of this novel is Rodrigo S.M., who spots the ugly protagonist living in the slums of Rio de Janeiro. For 10 points, name this novel about Macabea by Clarice Lispector.
ANSWER: The **Hour of the Star**

20. Towards the end of his life, this ruler was the target of a crusade which set up Henry Raspe as an anti-king in opposition to him. This ruler's son, Henry, revolted against him when this ruler strengthened the power of the princes at the expense of the towns in his Decree of Ravenna. After crowning himself "king of Jerusalem," this ruler threatened the Papal States with invasion despite earlier having declared support for the papacy in the Golden Bull of Eger; that threat resulting in this ruler signing the Peace of San Germano with Pope Gregoy IX. This ruler reorganized the Kingdom of Sicily on the basis of Roman jurisprudence under the Constitutions of Melfi, a model he then applied to his own home nation at the Diet of Mainz. This ruler's military accomplishments included the defeat of the Second Lombard League at Cortenuova and a victory won early in his reign in alliance with Philip II of France over Otto of Brunswick and the Welfs, the Battle of Bouvines. Known as "Stupor Mundi," for 10 points, identify this Holy Roman Emperor who ruled from 1212 until 1250.
ANSWER: **Frederick II** [do not accept "Frederick Barbarossa" because that's Frederick I]

1. This man was elected president in 1916 following the introduction of the secret ballot via the Saenz Pena Law. For 10 points each:
[10] Identify this first Argentine president elected under broad popular suffrage. In 1919, his government's repression of striking workers led to the Tragic Week riots.
ANSWER: Hipolito **Yrigoyen**
[10] The time period lasting from Yrigoyen's removal from the presidency by the coup of Jose Uriburu in 1930 until 1943 is known by this somewhat chronologically inaccurate name, or alternately by a name that designates the Fascist sympathies of the government during that time.
ANSWER: **Infamous Decade** or **Conservative Restoration**
[10] Unsurprisingly, the conservative government of Augustin Justo made this political organization illegal in 1936.
ANSWER: **Communist** Party

2. This film opens with one title character dropping her scarf in a Parisian park, à la the White Rabbit from *Alice in Wonderland*, and the other title character picking it up and chasing after her—including when she hops a tram—for fifteen minutes. For 10 points each:
[10] Identify this phantasmagorical film by the director of *Paris Belongs to Us* that follows a librarian and magician as they attempt to unravel the mystery behind the haunted house at 7 bis, rue du Nadir-aux-Pommes, which originally left them with no memory of their visit and a hard candy in their mouth.
ANSWER: **Céline and Julie Go Boating** [or **Céline et Julie vont en bateau**]
[10] *Céline and Julie Go Boating* is a film by this French *nouvelle vague* director who is also behind the stunning 13-hour epic *Out 1: Noli me tangere*.
ANSWER: Jacques **Rivette**
[10] This superb Rivette film depicts the destruction of the relationship between Sébastien, who is directing a rehearsal of Racine's Andromaque, and his wife, Claire, cast in the leading role of Hermione, who cannot stand the presence of a TV crew filming rehearsals.
ANSWER: L'**amour fou**

3. This language was developed by Robin Milner, and its idiomatic style consists of defining patterns to match against function arguments. For 10 points each:
[10] Identify this functional programming language, an implementation of which is the .NET language F# (F-sharp). Another implementation was designed by a team at INRIA in France.
ANSWER: Standard **ML** or **metalanguage**
[10] ML and its variants use the Hindley-Milner algorithm to perform this task, which relieves programmers of the responsibility to tell the compiler what kinds of objects they're using.
ANSWER: **type inference** [accept anything implying the figuring out of type]
[10] ML also implements a parametric version of this property, which allows it to maintain type safety. This property of a language is the ability of a single function to transparently handle arguments of different types.
ANSWER: **polymorphism**

4. In this story, Mann uses a boat stolen by Bob to get a doctor for his wife Lulu, who is in labor, but they arrive too late, and Lulu dies. For 10 points each:
[10] Identify this story in which Mann is shot by soldiers while trying to escape after he's identified as the

man who shot Mr. Heartfield.
ANSWER: **Down by the Riverside**
[10] "Down by the Riverside" is found in a collection together with this story, which ends with the title character witnessing Bobo being burned alive by a white mob.
ANSWER: **Big Boy Leaves Home**
[10] "Down by the Riverside" and "Big Boy Leaves Home" are both found in Richard Wright's *Uncle Tom's Children*, which is prefaced with this personal recollection of life in the South under the title legal regime.
ANSWER: The **Ethics of Living Jim Crow**

5.

6. The author of this work set out to answer the question "how did so much life get into the textual traces?" and calls his subject matter the "poetics of culture." For 10 points each:
[10] Identify this work of literary criticism introduced by the essay "The Circulation of Social Energy." Its section on "Martial Law in the Land of Cockaigne" focuses on the dramatic and societal uses of anxiety.
ANSWER: **Shakespearean Negotiations**
[10] *Shakespearean Negotiations* is probably the best known work of this literary scholar, one of the main forces behind the "new historicism" critical movement.
ANSWER: Stephen **Greenblatt**
[10] Greenblatt begins his essay on "Shakespeare and the Exorcists" by noting that Shakespeare had been reading Samuel Harsnett's book on exorcisms while writing this play. Greenblatt argues that both Harsnett's book and the elements in this play inspired by it, such as Edgar's disguise as Poor Tom, are embedded in a larger political struggle over the meaning of the sacred.
ANSWER: **King Lear**

7. Stern modified a model of this structure by assuming that ions have finite size and are thus offset from the surface by a few nanometers and can be treated as point charges. For 10 points each:
[10] Identify this structure described by the Gouy-Chapman model and found at the interface of the dispersed phase of colloids.
ANSWER: electrical **double layer** [or E**DL**; or **diffuse** double **layer**]
[10] This second-order PDE describes an electrical double layer. It is a combination of an equation from electrostatics and a particle distribution.
ANSWER: **Poisson-Boltzmann** equation [or **PBE**]
[10] This quantity is the double-layer thickness and is defined as the distance at which the potential has fallen to the maximum potential over e.
ANSWER: **Debye length**

8. According to one anecdote about this ruler, after killing Rignomer, Ragnachar, and Ricchar, he summoned an assembly of his subjects and remarked on his loneliness so that he could flush out a relative he had forgotten to kill. For 10 points each:
[10] Identify this ruler who converted to Catholicism and founded the Merovingian dynasty.
ANSWER: **Clovis** I
[10] Much of what we know about Clovis, including the above anecdote, comes from this sixth-century chronicler's *Ten Books of Histories*.
ANSWER: Saint **Gregory of Tours** or **Gregorius Florentius**
[10] Clovis was the most important western ally of this Byzantine emperor, who made Clovis an imperial consul for his exploits against the Visigoths. Succeeded by Justin I, he was controversial for his monophysite beliefs.

ANSWER: **Anastasius I**

9. Among the Hindus, the Kanyadaan ceremony is performed at one of these events. FTPE,
[10] Name this kind of event, which in Hinduism involves holding hands in front of a sacred fire.
ANSWER: a **wedding**
[10] At a Jewish wedding, you may see this special canopy, under which the bride and groom stand during the ceremony. The wedding contract is read from here.
ANSWER: **chuppah**
[10] If you want to get married in the Catholic Church, you generally have to go through this process, a series of consultations with a priest or deacon where issues such as spirituality, finances, and family planning are discussed. It can take as long as six months.
ANSWER: **Pre-Cana**

10.

11. Senator Gideon Robertson was one of the two prominent politicians who met with the Citizens' Committee of 1000 in an attempt to put an end to this event. For 10 points each:
[10] Identify this event, initiated mostly by builders and metalworkers, which ended on "Bloody Saturday" and resulted in the prosecution for seditious libel of Fred Dixon and James Woodsworth.
ANSWER: **Winnipeg** General **Strike** of 1919 [accept anything mentioning Winnipeg and a strike]
[10] The other politician involved in the repression of the strikers was this prominent Conservative, who served as PM of Canada twice, from 1920 to 1921, and again briefly in 1926; most of that time he spent playing second fiddle to Mackenzie King.
ANSWER: Arthur **Meighen**
[10] Many of the Winnipeg strikers supported joining this labor organization, which, as its name suggests, was intended to encompass pretty much all laborers of all kinds. Its membership declined a few years after the strike and it was eventually absorbed into the Canadian Labour Congress.
ANSWER: **O**ne **B**ig **U**nion

12. This novel, which continues the story begun in *The Sand Child*, won its author the 1987 Prix Goncourt. For 10 points each:
[10] Identify this novel about the girl Zahra who is raised as a boy named Ahmed due to her father's desire for a male heir.
ANSWER: The **Sacred Night** or La **Nuit Sacree**
[10] This Moroccan author wrote both *The Sand Child* and *The Sacred Night*.
ANSWER: Tahar **Ben Jelloun**
[10] After coming to Paris, Ben Jelloun apparently became good friends with this French novelist and playwright of *The Blacks* and *Our Lady of the Flowers*.
ANSWER: Jean **Genet**

13. This man left behind some sketches for a tenth symphony when he died on November 19, 1828 at the age of thirty-one. For 10 points each:
[10] Name this composer of the *Trout* quintet, whose eighth symphony was a little more complete but is still known as the "Unfinished".
ANSWER: Franz **Schubert**
[10] The *Tenth Symphony* fragments were the basis for a piece by this composer, entitled *Rendering*. This man's *Sinfonia* extensively quotes Mahler, and he also wrote fourteen *Sequenzas*.
ANSWER: Luciano **Berio**

[10] This American composer's quartet entitled *November 19, 1828* imagines Schubert encountering a "hall of mirrors" after he "crosses into the next world". Vocal works by this man include *The Flight Into Egypt* and *The Great Gatsby*.
ANSWER: John **Harbison**

14.

15. A book about this character's "Confessions" tells of how he falls in love with Mireille on Armistice day and creates movies based on Poe stories for her to star in. For 10 points each:
[10] Identify this literary character, an English millionaire who in another work sets off on an Antarctic voyage after being rejected by his lover Hedwiga in St. Petersburg.
ANSWER: Dan **Yack**
[10] Dan Yack is a sort of alter ego of this Swiss Francophone author, who wrote a fictional account of the man on whose property the California gold rush began, *Sutter's Gold*.
ANSWER: Blaise **Cendrars** or Frederic-Louis **Sauser**
[10] John dos Passos translated into English Cendrars' epic poem about the titular "little Jehanne" who takes the title conveyance from Moscow to Mongolia during the Russo-Japanese War.
ANSWER: **Transsiberian** Railroad

16.

17.

18. These coordinates are used to maximally extend the Schwarzschild solution to the Einstein field equations. For 10 points each:
[10] Identify this coordinate system which eliminates one of the singularities in the Schwarzschild solution.
ANSWER: **Kruskal**-Szerkes coordinates
[10] The singularity thus removed by the Kruskal coordinates corresponds to this boundary around a black hole, across which no information can travel.
ANSWER: **event horizon**
[10] For the case of the Schwarzschild black hole, this vector field that preserves the metric on a Riemannian manifold vanishes.
ANSWER: **Killing** vector field

19. These receptors cross the cell membrane seven times, with their N-terminus located extracellularly . For 10 points each:
[10] Identify these transmembrane receptors that activate certain heterotrimeric proteins by causing them to dissociate from GDP and associate with GTP.
ANSWER: **G protein-coupled** receptors [or **GPCR**s; or **serpentine** receptors]
[10] A common target of activated G proteins are enzymes that produce secondary messengers, such as this enzyme that catalyzes the production cAMP from ATP.
ANSWER: **adenylate cyclase** [or **adenylyl cyclase**; or **adenylyl cyclone**]
[10] This enzyme that cleaves PIP2 to create the secondary messengers DAG and IP3 is another target of activated G proteins.
ANSWER: **phospholipase C** [or **PLC**]

20. The only member of either the House or the Senate to vote against this resolution was Barbara Lee.

For 10 points each:

[10] Identify this joint resolution passed on September 18, 2001, which empowered the president to take "necessary and appropriate" actions against those involved in the 9/11 attacks.

ANSWER: **A**uthorization for **U**se of **M**ilitary **F**orce

[10] The AUMF has only two sections, the latter of which indicates that it should be understood as satisfying the "statutory authorization" requirement of section 5b of this 1973 law.

ANSWER: **War Powers** Act or Resolution

[10] In this case, the Supreme Court rejected the claim that the AUMF gave the president the power to set up military commissions to try Guantanamo detainees, such as this case's plaintiff.

ANSWER: **Hamdan** v. Rumsfeld