1. Jiayi is traveling in his rocket ship when he suddenly encounters Alien X, who has the ability to freeze time unless Jiayi solves for x. What should his answer be given the equation:

A. {-1,5} B. {-4} C. {-4,5} D. {-1} E. NOTA

2. Jiayi gets the answer correct! Unfortunately, Alien X also has the ability to change the rules and gives another question. Even though Jiayi is annoyed, he loves math, so he answers correctly and escapes. What was his answer if the question was: Given that , find .

A. 45 B. 54 C. 81 D. 108 E. NOTA

3. Elon Musk and Bruce were just touring their new home, the planet Mars, when all of a sudden, they were approached by a Martian who asked them to solve the problem” How many palindromes exist between the numbers 1 and 1,000 inclusive?” What is the correct answer to this question assuming that palindromes are numbers that are the same forwards and backwards (e.g., 131)?

A. 108 B. 112 C. 144 D. 171 E. NOTA

4. What property of a function guarantees that it will always have an inverse?

A. The function is continuous

B. For any real value of y, there's only one corresponding x-value

C. The range of the function is all real numbers

D. B and C

E. NOTA

5. Nelson argues that the planet Krypton is real, not knowing that it is actually imaginary. If the imaginary number equals and , what is +++?

A. 1 + i B. 1 - i C. 2i D. -1 - i E.NOTA

6. Bruce's mind is an infinite void. The empty space is inside stretching forever but eventually converging to a single brain.

What does the infinite sum of converge to.

A. 1.75 B. 2 C. 2.25 D. 2.5 E.NOTA

7. Hadriel and Aaron were playing a 3-point shooting contest in space (very fun but it took a long time for the ball to reach the hoop). The probability that Hadriel will make a 3-pointer is 25%. If Hadriel misses two shots in a row, then Aaron wins. What is the probability that Hadriel wins the 3-point shooting contest?

A. B. C. D. E.NOTA

8. Nima and Nelson landed on planet ABCD when they received a call from Bruce who told them that the planet, they landed on is actually the shape of a sphere! What is the distinct number of permutations of the name of the planet (e.g., ABCD, ABDC, and ACBD are all distinct permutations)?

A6 B.12 C. 24

D. 48 E.NOTA

9. Cyrus told Ryan that if he doesn’t solve this question, he would become Cyrus’s opp. The question that Cyrus asked was “What is the range of the function ?” Given that Ryan is very good at these types of questions and doesn’t miss this one, what was the correct answer that Ryan gave to Cyrus which prevented Ryan from becoming Cyrus’s opp?

A.

B.

C.

D.

E. NOTA

10. Hadriel, Nima, Arib, Shaoyang, Rohan, and Aaron were kicking penalties when after everyone missed, Hadriel made his shot. So, in proper fashion Hadriel did arguably the greatest celebration in existence which would be yelling “SIUUUU”. What is the number of distinct words that can be formed from SIUUUU?

A. 24 B. 30 C. 45 D. 720 E. NOTA

11. List the following three fractions in least to greatest order.

A= , B=, G=

A. B,G,A B. A,B,G C. A,G,B D. G,B,A E. NOTA

12. Aaron is from planet OCD and doesn't like it when things are out of place. He travels to Earth only to find numbers that have square roots in the denominator. Help Aaron find the value of  if .

A.

B.

C.

D.

E. NOTA

13.Hadriel told Bruce that if he is unable to solve this question, he will force Bruce to watch a compilation of Nima’s terrible Fortnite skills. The question is “ Find the inverse of ”. Solve this question to save Bruce from having to watch the compilation of Nima’s terrible Fortnite skills.

A. y =

B. y =

C. y =

D. y = + 7189

E. NOTA

14. Wesley comes from a strange planet that only has one-variable equations. If any question has more than 1 variable, he immediately gives up. Even though he is the smartest man on Earth he needs the answer to this system of equations.

A. (1,1) B. (-1,3) C. (4,-2) D. (2,0) E.NOTA

15. Wesley’s age is a secret, and he’ll only tell it in the form of an inequality. Given that the inequality is and Wesley’s age is , find the possible ages of Wesley.

A. B. C. D. E.NOTA

16. Wesley’s best friend Cyrus is much older than Wesley. Cyrus says that his age, , is given by the equation . Given that Cyrus’ age cannot be negative, what is his age?

A. 14 B. 15 C. 16 D. 17 E. NOTA

17. Hadriel is floating in space when he finds out that USA lost to the Netherlands during the World Cup. He becomes sad and starts crying. His tears move in the direction of parabola . Find the minimum y-value of the parabola.

A. 3 B. 6 C. 16 D. 25 E. NOTA

18. Rohan is on the point (15,24) on the cartesian plane, and he has just called Eric (who is on the point (55,15)) to bring him some slurp juice. What is the shortest distance Eric can travel deliver him the slurp juice.

A. 41 B. C. 44 D. 49 E. NOTA

19. Find the inverse of the converse of the contrapositive of the statement” If Bruce drinks Red Bull, then he will become very good at tennis.”

A. If Bruce doesn't become very good at tennis, then he didn't drink Red Bull.

B. If Bruce drinks Red Bull, then he will become very good at tennis.

C. If Bruce doesn't drink Red Bull, then he won't become very good at tennis.

D. If Bruce becomes very good at tennis, then he drank Red Bull.

E. NOTA

20. Hadriel, Bruce, James, and Arib had gathered a total of 10 Xbox controllers. In how many ways can the 10 Xbox controllers be distributed amongst the 4 boys?

A. 192 B. 210 C. 252 D. 286 E.NOTA

21. Yimo and Arib were hanging out in the International Space Station when Cyrus tells them that if they don’t solve this question correctly then Aaron won’t be able to make a single 3-pointer for the rest of his life! The question is, “What is the sum of the first 10 values of the sequence 1,1,2,3,5,8,13,21….?”

A. 143

B. 144

C. 145

D. 146

E. NOTA

22. A meteorite is heading towards Earth which will destroy Ohio. The meteorite is shaped like a wooden log so naturally NASA must solve a logarithm question to stop it. Just kidding! They must instead absolutely solve for the values of that satisfy the equation . Help them save Ohio!

A. {4} B. {7} C. {4, -18} D. {7,-18} E. NOTA

23. What is the area of the largest square that can fit inside of a circle with radius 8?

A. 128 B. 156 C. 198

D. 256 E. NOTA

24. Jeremiah is one of the hottest men on the planet, in fact some believe that he is hotter than the sun! How hot is Jeremiah in Celsius given that he is 3020 degrees Fahrenheit? .

A. 1510 B. 1660 C. 1669 D. 1678 E. NOTA

25. Caleb and Aaron decided to travel to either one of two planets, Caleb wanted to go to Planet Westbrick while Aaron wanted to go to Planet Lebrahn. They toss a coin to see which Planet they will go to, if it lands on heads, Caleb wins and the two will go to Planet Westbrick, if it lands on tails, Aaron wins and the two will instead go to Planet Lebrahn. What is the probability that Aaron wins?

A. 0 B. C. D. 1 E. NOTA

26. Hadriel was wondering what Bruce’s favorite word was so he asked Bruce and Bruce replied “My favorite word is the Fun-word!” So Hadriel decided to ask a question about Bruce’s favorite word which is Function. Let . What is the remainder when is divided by 10?

A. 2 B. 4 C. 6 D. 8 E. NOTA

27. Find the positive difference of the solutions to - 2x - 35 = 0.

A. 3 B. 9 C. 10 D. 12 E. NOTA

28. Jeremiah and Hadriel went to Ripley’s new attraction which is” The Universe’s Weirdest Planets!” While touring the massive area Jeremiah noticed that the shape of the building was a hemisphere! Given that the radius of this hemisphere is 5 km, what is the volume of the hemisphere in meters cubed?

A. B. C. D. E.NOTA

29. What is the slope of the equation given by

A. 2 B. 3 C. 4 D. 5 E. NOTA

30. Since you have worked so very hard today on this test, Bruce wanted to show how proud he is of you for taking this test. So, the answer to this question is E.

A. x\_x B. >:) C. -\_- D. (◕‿◕) E. NOTA