The answer choice "NOTA" means "None of the Above" answers are correct.

1. The Snowman has 2 bags of nuts. He knows the mixture in bag 1 is 60% walnuts and 40% pecans. Bag 2 contains pecans only. If The Snowman wants 20 pounds of nuts, 36% of them walnuts, how many pounds of nuts from bag 1 should he combine with nuts from bag 2?

   A. 8 B. 10 C. 12 D. 16 E. NOTA

2. Find the number of integers K that satisfy the inequality: $2025! + 17 < K < 2025! + 76$.

   A. 58 B. 59 C. 60 D. 76 E. NOTA

3. A quadratic equation of the form: $ax^2 + bx + c = 0$, with real coefficients and $a > 0$ has a solution of $\frac{-3-i\sqrt{2}}{2}$. Find the coefficient of the linear term if the coefficients are relatively prime and $a > 0$.

   A. -12 B. -6 C. 6 D. 12 E. NOTA

4. Find $g^{-1}(4)$ if $g(x) = \sqrt{\frac{x-1}{5}} + 7$.

   A. No solution B. $\frac{35+\sqrt{15}}{5}$ C. 46 D. 50 E. NOTA

5. Given matrix $A = \begin{bmatrix} 2 & 2 \\ -1 & 4 \end{bmatrix}$, find the value of the determinant of $3A^{-1}$.

   A. $\frac{3}{10}$ B. $\frac{9}{10}$ C. $\frac{13}{10}$ D. $\frac{9}{5}$ E. NOTA

6. A sphere of radius 2 is inscribed in a right circular cone whose height is 12. Find the radius of the cone.

   A. $\sqrt{6}$ B. 2.4 C. 3 D. 6 E. NOTA

7. A parabola with a vertical directrix passes through the point $(3,3)$ and has its vertex at $(4,1)$. What is the sum of the y-intercepts?

A. 0 B. 2 C. 4 D. 8 E. NOTA

8. Wiggie started a math team with 10 kids, and it has grown exponentially to 160 kids after 8 years. How many members (rounded to the nearest integer) will it have after the 9^{th} year if the pattern continues?

A. 224 B. 226 C. 240 D. 320 E. NOTA

9. In rectangle $MRLU$, point F lies on side $\overline{LU}$ such that the area of triangle LRF minus the area of triangle MUF equals the area of triangle MFR minus the area of LRF. If the area of triangle MUF equals 8, what is the area of triangle MRF?

A. $\frac{40}{3}$ B. 16 C. 20 D. 24 E. NOTA

10. A permutation of the letters in MRWIGYLU is selected at random. What is the probability that there is a vowel among the first five letters? (I and U are the only vowels)

A. $\frac{3}{28}$ B. $\frac{3}{14}$ C. $\frac{11}{14}$ D. $\frac{25}{28}$ E. NOTA

11. There are some integral ordered pairs (M, U) with $M < U$ that satisfy $M^2 + U^2 = 25$. Find the sum of all possible distinct values of M.

A. -6 B. 0 C. 3 D. 7 E. NOTA

12. Find the area of the intersection of the graphs of $(x+1)^2 + y^2 \leq 2$ and $(x-1)^2 + y^2 \leq 2$.

A. $\pi - 2$ B. $2\pi - 2$ C. $\pi + 2$ D. 2π E. NOTA

13. Triangle ZLU is isosceles with $ZL = ZU$ and $LU = \sqrt{3} - 1$. If the degree measure of angle LZU is 30, compute the value of $(ZL)^6$.

A. $\frac{1}{64}$ B. $\frac{1}{8}$ C. 8 D. $\frac{1}{512}$ E. NOTA

14. What is the 2025^{th} smallest positive integer that gains an extra digit in length when doubled?

A. 6469 B. 6470 C. 6471 D. 6472 E. NOTA

15. In pentagon $JWIGS$, Angles I and S are both right angles and the degree measure of angle G is 120. If $JS = WI = 18$, $JW = 12$, and $GS = IG$, what is GS?

A. $\frac{15}{2}$ B. $5\sqrt{3}$ C. $\frac{15\sqrt{3}}{2}$ D. $10\sqrt{3}$ E. NOTA

16. The interior angles of a convex polygon form an arithmetic sequence with a common difference of 4 degrees. If the largest interior angle measures 172 degrees, what is the number of sides of the polygon?

A. 8 B. 9 C. 12 D. 15 E. NOTA

17. Solve for k: $\ln(k-2) - 1 = \ln(k+2)$.

A. $\frac{2+2e}{1-e}$ B. $\frac{2+2e}{1+2e}$ C. $\frac{2-e}{1+e}$ D. $\frac{2-e}{1-2e}$ E. NOTA

18. Snow-Pooh, Zoo-Lu, and Wiggie-Mu are having a mental math competition. In how many different ways can the three finish if it is *possible* for two or more participants to finish in a tie?

A. 10 B. 11 C. 12 D. 13 E. NOTA

19. Given: $(x^2 - 10x + 25)^{-1/2} = 8$, the smallest solution can be written as $\frac{L}{8}$. Compute L.

A. 7 B. 39 C. 41 D. 53 E. NOTA

20. At a chess competition each of 15 schools sent one senior and one junior. Each senior played a match with everyone except with their junior teammate, and no matches took place between juniors. How many matches were there among these 30 attendees?

A. 210 B. 225 C. 315 D. 330 E. NOTA

21. What is the maximum possible value of x in an ordered pair that satisfies the following system of inequalities?

$$\begin{cases} -10 \le x + y \le 4 \\ x^2 + y^2 - 36(x + y) \le 2xy \end{cases}$$

A. 4 B. 8 C. 21 D. 35 E. NOTA

22. The area bounded by the x-axis, the lines $y = kx$, $x = 1$, and $x = 4$ has an area of 30. What is the largest possible value for k?

A. 3.75 B. 4 C. 5 D. 7.5 E. NOTA

23. In triangle ROB, $RB = 42$, $OB = 40$, and $RO = 58$. What is the radius of the inscribed circle?

A. 12 B. 15 C. 24 D. 30 E. NOTA

24. What is the sum of the integral values that are in the range of the following function? Let $f(x) = 1 - 2\sqrt{8 + 2x - x^2}$.

A. -14 B. 2 C. 12 D. $-\infty$ E. NOTA

25. A circular cone with radius 10 and altitude 8 is cut by a plane parallel to its base so that the two resulting pieces have equal volume. What is the altitude of the piece which is a cone?

A. $4\sqrt[3]{2}$ B. $4\sqrt[3]{4}$ C. $4\sqrt[3]{3}$ D. 4 E. NOTA

26. Triangle ROB has median BS, centroid F, and altitude BL. If $BL = 45$ and $SL = 24$, find FS.

A. $\sqrt{161}$ B. 17 C. 34 D. 51 E. NOTA

27. You have a set of 9 distinct integers. 6 of the elements of the set are 1, 2, 3, 5, 8, and 12. Compute the sum of all possible values of the median of this set

A. 18 B. 22 C. 26 D. 35 E. NOTA

28. J-Wigs invests his life savings of \$2500 in three accounts earning 6%, 8%, and 9% simple interest. He invests twice as much in the 6% account as in the 9% account. If he wants to earn \$185 in interest after one year, how much should he invest at 9%?

A. \$300 B. \$500 C. \$600 D. \$1000 E. NOTA

29. You draw two cards without replacement from a standard 52 card deck, what is the probability that two black cards or two kings are drawn?

A. $\frac{165}{676}$ B. $\frac{331}{1326}$ C. $\frac{331}{552}$ D. $\frac{52}{221}$ E. NOTA

30. The sum of the digits of a three-digit number is 26. The number is multiplied by 13, then by 11, and finally by 7. How many times will the digit 9 occur in the final product?

A. 0 B. 2 C. 4 D. 6 E. NOTA