For all questions, answer choice (E) NOTA means that none of the given answers is correct. Good Luck!

1. What is the sum of the ordinate of the y-intercept and the slope of a line with equation $y - 7 = 3x$?
   (A) -4 (B) -10 (C) 10 (D) 4 (E) NOTA

2. Find the radius of a circle with area 36π.
   (A) 18 (B) 12 (C) 9 (D) 6 (E) NOTA

3. Simplify $\sqrt{64 \times 196}$.
   (A) 12544 (B) 1568 (C) 896 (D) 114 (E) NOTA

4. What is the length of the hypotenuse of a right triangle with legs of length 7 and 24?
   (A) 31 (B) 38 (C) 17 (D) 25 (E) NOTA

5. Simplify: $\dfrac{2}{2+\dfrac{2}{2+\dfrac{2}{2+2}}}$
   (A) $\frac{5}{2}$ (B) $\frac{5}{7}$ (C) $\frac{5}{14}$ (D) $\frac{19}{7}$ (E) NOTA

6. Find the sum of x, y, and z, if all of the following equations are true:

$$3x + 4y + 2z = 27$$
$$5x + 2y + z = 24$$
$$y = 3x - z$$

   (A) 7 (B) 9 (C) 14 (D) 27 (E) NOTA

7. A circle is placed inside a square, such that the diameter of the circle is equal to the side length of the square. What is the area outside of the circle, but inside the square if the square has side length 4?
   (A) $16 + 4\pi$ (B) $16 - 4\pi$ (C) 8 (D) $4\pi - 8$ (E) NOTA

8. Which answer choice is $4^4 + 4^4 + 4^4 + 4^4$ equivalent to?
   (A) 32 (B) 4^{4^4} (C) 4^5 (D) 4^{16} (E) NOTA

9. If $y = 2$, solve the given equation for x: $3y + y^2 - 16 = 24 + 3x$.
   (A) $x = -10$ (B) $x = 2$ (C) $x = -6$ (D) $x = -30$ (E) NOTA

10. What is the sum of the abscissa and the ordinate of the point of intersection of $3x + 2y = 24$ and $5x + 3y = 12$?
    (A) 36 (B) 48 (C) 84 (D) 132 (E) NOTA

11. What is 25% of 80% of $\frac{3}{5}$ of 200?
    (A) 12 (B) 24 (C) 30 (D) 40 (E) NOTA

12. What is the units digit of 2016^{59}?
    (A) 4 (B) 9 (C) 6 (D) 0 (E) NOTA

13. Find the sum of all of the positive integers between 5 and 95, inclusive.
(A) 9100 (B) 4550 (C) 2275 (D) 4500 (E) NOTA

14. What are all of the solutions to the quadratic equation $x^2 - 8x + 16 = 0$?
(A) $x = \{-4, 4\}$ (B) $x = \{-4\}$ (C) $x = \{4\}$ (D) $x = \{-2, 4\}$ (E) NOTA

15. What is $(100 - 34)(99 - 34)(98 - 34) \ldots (3 - 34)(2 - 34)(1 - 34)$?
(A) -34 (B) -1336336000 (C) -106120800 (D) -171700 (E) NOTA

16. Find the sum of the roots of $f(x) = x^2 + 3x - 4$.
(A) -3 (B) 3 (C) 4 (D) -4 (E) NOTA

17. Find the slope of the line perpendicular to $-13x + 47y = 159$.
(A) $-\frac{13}{47}$ (B) $\frac{13}{47}$ (C) $-\frac{47}{13}$ (D) $\frac{47}{13}$ (E) NOTA

18. A cube of side length 5 units is created using smaller $1 \times 1 \times 1$ (unit) cubes. The surface of the cube is painted completely. How many unit cubes have none of their faces painted?
(A) 64 (B) 99 (C) 27 (D) 61 (E) NOTA

19. What is the slope of a line perpendicular to the horizontal axis of the Cartesian plane?
(A) 0 (B) $\frac{1}{2}$ (C) 1 (D) Undefined (E) NOTA

20. What is the sum of the first 200 non-negative integers?
(A) 20100 (B) 19900 (C) 20000 (D) 19800 (E) NOTA

21. Find the minimum of the function $f(x) = x^2 - 12x + 34$.
(A) -2 (B) 34 (C) 142 (D) 0 (E) NOTA

22. What is the distance between the points $(7, 12)$ and $(3, 4)$ on the Cartesian plane?
(A) 4 (B) 8 (C) $4\sqrt{5}$ (D) $8\sqrt{5}$ (E) NOTA

23. What is the equation of the perpendicular bisector of the line segment with endpoints $(8, 4)$ and $(2, 6)$? Express your answer in standard form.
(A) $3x + y = 20$ (B) $3x - y = 10$ (C) $3x - y = 20$ (D) $3x + y = 10$ (E) NOTA

24. X is jointly proportional to the square root of Y and the cube of Z. When X equals 5, and Y equals 2401, Z equals 3. What is X equal to when Y equals 36 and Z equals 2?
(A) $\frac{405}{196}$ (B) $\frac{2205}{16}$ (C) $\frac{980}{81}$ (D) $\frac{80}{441}$ (E) NOTA

25. What values of x satisfy $|x - 3| \geq 12$?
(A) $x \leq -9$ or $x \geq 15$ (B) $x \leq -9$ (C) $x \geq 15$ (D) $-9 \leq x \leq 15$ (E) NOTA

26. Simplify $\frac{a^{-3} \cdot b^5 \cdot c^6 \cdot 3^6 \cdot 2^5}{c^{10} \cdot 3^8 \cdot a^9 \cdot 2^{-4} \cdot b^{-7}}$
(A) $\frac{512 \cdot b^4}{9 \cdot a^6 \cdot c^4}$ (B) $\frac{512}{9 \cdot a^6 \cdot b^2 \cdot c^4}$ (C) $\frac{2 \cdot b^{12}}{9 \cdot a^{12} \cdot c^4}$ (D) $\frac{2}{9 \cdot a^6 \cdot b^2 \cdot c^4}$ (E) NOTA

27. Expand $(x+4)^3$.
(A) $x^3+8x^2+20x+16$ (B) $x^3+48x^2+12x+48$ (C) $x^3+12x^2+48x+64$
(D) $x^3+8x^2+20x+48$ (E) NOTA

28. Evaluate the following expression: $\sqrt{42+\sqrt{42+\sqrt{42+\ldots}}}$
(A) 6 (B) 7 (C) -6, 7 (D) -6 (E) NOTA

29. How many distinct arrangements are there of the letters in $BROTHERHOOD$?
(A) 39916800 (B) 1663200 (C) 39916799 (D) 1663199 (E) NOTA

30. Solve for x, if $4^{6x+16}=8^{12x-64}$.
(A) $\frac{40}{3}$ (B) 8 (C) $\frac{64}{3}$ (D) $\frac{28}{3}$ (E) NOTA