

Select (E) NOTA if none of the above answers are correct. Good luck!

- Compute the sum of the roots to the equation $x^2 - 2012x + 2010 = 0$.
 (A) -2012 (B) -2010 (C) 2010 (D) 2012 (E) NOTA
- Mr. Kiser has a collection of 2010 marbles, all of which are either green, yellow, red, or blue. He has $2x - 20$ green marbles, $3x - 30$ yellow marbles, $4x - 40$ red marbles, and $10x + 10$ blue marbles for some positive integer x . How many red marbles does Mr. Kiser have?
 (A) 300 (B) 400 (C) 1100 (D) 1310 (E) NOTA
- Three consecutive even integers have a sum of 2010. Compute the sum of the digits of the largest number.
 (A) 13 (B) 15 (C) 18 (D) 20 (E) NOTA
- For two numbers x and y , $x + y = 58$ and $x - y = 24$. Compute the value of $2x$.
 (A) 82 (B) 84 (C) 86 (D) 88 (E) NOTA
- The expression $(25x^2 - 0x - 1)$ can be factored into form $(Ax + B)(Cx + D)$ where A, B, C and D are integers. Which of the following is true?
 (A) The expression cannot be factored.
 (B) $A = B$ and $C = D$
 (C) $A = C$ and $B = D$
 (D) $A = C$ and $B = -D$
 (E) NOTA
- Solve for x , where $3^x = 27^3$.
 (A) 0 (B) 6 (C) 9 (D) 27 (E) NOTA
- Completely factor the expression $(x^3 + 3x^2 + 6x)(3x^3 + 9x^2 + 18x)$.
 (A) $3x^2(x^4 + 6x^3 + 21x^2 + 36x + 36)$
 (B) $3x^2(x^2 + 3x + 6)^2$
 (C) $3x^6 + 18x^5 + 63x^4 + 108x^3 + 108x^2$
 (D) $3(x^6 + 6x^5 + 21x^4 + 36x^3 + 36x^2)$
 (E) NOTA
- The expression $\sqrt{2000} + \sqrt{1000} + \sqrt{500} + \sqrt{250} + \sqrt{125}$. can be written in the form $a\sqrt{5} + b\sqrt{10}$ where a and b are integers. Compute the value of $a + b$.
 (A) 30 (B) 40 (C) 50 (D) 60 (E) NOTA
- How many digits are in the product of 4^{12} and 5^{24} ?
 (A) 20 (B) 24 (C) 25 (D) 26 (E) NOTA
- Solve for A in the equation $AB + CD + EFG = Z$ where $ABCDEFGZ \neq 0$.
 (A) $\frac{Z - EFG - CD}{B}$ (B) $\frac{Z + EFG + CD}{B}$ (C) $\frac{Z EFG CD}{B}$ (D) $Z EFG C D B$ (E) NOTA
- Determine, in slope-intercept form, the equation of the line containing the points $(1, 2)$ and $(23, 13)$.
 (A) $y = -\frac{1}{2}x - \frac{3}{2}$ (B) $y = \frac{1}{2}x - \frac{1}{2}$ (C) $y = \frac{1}{2}x + \frac{1}{2}$ (D) $y = \frac{1}{2}x + \frac{3}{2}$ (E) NOTA

12. What is the equation for the axis of symmetry of the parabola $y = 3x^2 - 12x + 12$?
- (A) $x = -4$ (B) $x = -2$ (C) $x = 2$ (D) $x = 4$ (E) NOTA
13. Compute the area of a circle with a diameter of $26x^4$.
- (A) $169x^{16}\pi$ (B) $169x^8\pi$ (C) $676x^8\pi$ (D) $676x^4\pi$ (E) NOTA
14. Yuan, while studying for his Sequences and Series test, encounters the Fibonacci sequence. The n th term a_n in the Fibonacci sequence is equal to the sum of the previous two terms, that is, $a_n = a_{n-1} + a_{n-2}$. Given that the first two terms of the sequence are $a_1 = 1$ and $a_2 = 1$, determine the 10th term of the Fibonacci sequence.
- (A) 21 (B) 34 (C) 55 (D) 89 (E) NOTA
15. Determine the slope of the line $5x + 100y = 36$.
- (A) -20 (B) -5 (C) 5 (D) 20 (E) NOTA
16. The expression $\frac{\left(\frac{1}{2}\right)^2 + \left(\frac{3}{4}\right)^2}{\left(\frac{25^2 - 20^2}{13^2 - 9^2}\right)}$ can be written in the fraction $\frac{a}{b}$ where a and b are relatively prime positive integers. Compute the value of $a + b$.
- (A) 590 (B) 591 (C) 592 (D) 593 (E) NOTA
17. The line $x - 4y = 12$ is reflected over the y -axis. Determine the sum of the x and y intercepts of the new line.
- (A) -15 (B) -12 (C) 12 (D) 15 (E) NOTA
18. Let $f(x) = 15x$, $g(x) = x^{15} + 15x$, and $h(x) = f(g(x))$. Compute the value of $h(1)$.
- (A) 15 (B) 225 (C) 240 (D) 15^{15} (E) NOTA
19. What is the degree of the polynomial $2010a^2b^4 + 2011a^3b + 2012^2a^6b^3$?
- (A) 4 (B) 6 (C) 9 (D) 11 (E) NOTA
20. Find the sum of the prime factors of 2010.
- (A) 67 (B) 77 (C) 1005 (D) 2010 (E) NOTA
21. Find the units digit of the expression 2004^{2004} .
- (A) 0 (B) 1 (C) 4 (D) 6 (E) NOTA
22. Compute the value of $6! - 5! - 4! - 3! - 2! - 1! - 0!$.
- (A) 120 (B) 566 (C) 710 (D) Undefined (E) NOTA
23. Let $a = -1$ and $\frac{a-b}{a} = 2010$. Compute the units digit of b^{2010} .
- (A) 1 (B) 3 (C) 6 (D) 9 (E) NOTA
24. Let $A =$ the sum of the first 50 positive even numbers and let $B =$ the sum of the first 50 positive odd numbers. Compute the value of $A - B$.
- (A) -50 (B) 0 (C) 50 (D) 5050 (E) NOTA

25. Simplify the product

$$\left(\frac{x^2 - 8x + 15}{x^2 - 4}\right) \left(\frac{x^2 - 25}{x^2 - 4x + 4}\right)^{-1},$$

where defined.

- (A) 1 (B) $(x - 5)(x + 5)$ (C) $\frac{(x - 3)}{(x + 5)}$ (D) $\frac{x^2 - 5x + 6}{x^2 + 7x + 10}$ (E) NOTA

26. Compute the discriminant of the equation $2x^2 - 7x + 5$.

- (A) 3 (B) 9 (C) 39 (D) 49 (E) NOTA

27. The repeating decimal $.4\overline{2}$ can be written as the fraction $\frac{a}{b}$ where a and b are relatively prime positive integers. Compute $a + b$.

- (A) 33 (B) 42 (C) 47 (D) 141 (E) NOTA

28. The expression $\sqrt{x\sqrt{x\sqrt{x}}}$ can be written in the form x^m where m is a rational number. Determine the value of m .

- (A) $\frac{3}{2}$ (B) $\frac{3}{4}$ (C) $\frac{7}{8}$ (D) $\frac{7}{16}$ (E) NOTA

29. Determine the solution to $|x - 5| > 7$.

- (A) $x > 12$ (B) $x \geq 12$ (C) $x < -2, x > 12$ (D) $x \leq -2, x \geq 12$ (E) NOTA

30. For two numbers a, b we have $ab = 7$ and $a^2b + ab^2 - a - b = 24$. Compute the value of $a^2 + b^2$.

- (A) 0 (B) 1 (C) 7 (D) 9 (E) NOTA