

Algebra I Individual Test

For the purposes of this test, answer E (NOTA) is assumed to mean None Of The Above.
 $x \bullet y$ is assumed to mean the product of x and y , and \sqrt{x} is the square root of x .

- The least common multiple of the terms $9b^2cd^4$ and $6b^3c^5d^2$ is
A. $54b^5c^6d^6$ B. $9b^6c^5d^8$ C. $18b^3c^5d^4$ D. $3b^2cd^2$ E. NOTA
- The midpoint of $(10,3)$ and $(6,5)$ can be written as (x,y) . The value of $(x+y)$ is
A. 24 B. 18 C. 12 D. 1 E. NOTA
- The fact that $p(s+z) = p(s) + p(z)$ illustrates the
A. Distributive Property of Multiplication Over Addition
B. Associative Property of Multiplication
C. Associative Property of Addition
D. Commutative Property of Multiplication
E. NOTA
- Which is the equivalent of i^{42} , given that $i^2 = -1$?
A. i B. -1 C. $-i$ D. 1 E. NOTA
- If $f(x) = 4x-10$, what is $f(f(3))$?
A. -2 B. 2 C. 28 D. 38 E. NOTA
- Let Φ = the number of subsets of the set $\{a, b, c\}$. What is the value of 2Φ ?
A. 7 B. 8 C. 14 D. 16 E. NOTA
- When k is divided by four, the result is 12. What is twice the difference of k and 3?
A. 0 B. 90 C. 93 D. 102 E. NOTA

8. The complement of the supplement of 132° is
- A. 132° B. 48° C. 42° D. 32° E. NOTA
9. $5m + sn = 5q$. Solve for n in terms of m , s , and q .
- A. $(5q-s)/5m$ B. $(q+m)/s$ C. $(q-m)/s$ D. $(5q-5m)/s$ E. NOTA
10. Given the points $A(-3,2)$ and $B(5,17)$, what is the distance AB ?
- A. 17 B. 23 C. $\sqrt{23}$ D. 289 E. NOTA
11. Mr. Caballero needs t hours to paint his house. How much of this house will he be able to paint in u hours ($t, u \neq 0$)?
- A. u B. u/t C. t/u D. $u - t$ E. NOTA
12. Simplify the expression: $6\sqrt{50} + 3\sqrt{128} + -4\sqrt{72} + \sqrt{8} \cdot \sqrt{4}$.
- A. Cannot be simplified further. B. $92\sqrt{2}$
C. $9\sqrt{118}$ D. $34\sqrt{2}$ E. NOTA
13. Given that $9^r = 27$, what is the value of r ?
- A. $1/3$ B. $3/2$ C. $2/3$ D. 3 E. NOTA
14. M varies directly as the cube of H . When $M = 9$, $H = 3$. When $M = 243$, $H = ?$
- A. 3 B. $3\sqrt{3}$ C. 9 D. 629 E. NOTA
15. Ms. Allison walked 16 km due west and then 30 km due north. She then walked in a straight line to her starting point. In total, how many kilometers has she walked?
- A. 34 B. 40 C. 46 D. 92 E. NOTA
16. What is/are the real root(s) of the equation $3x^2 + 5x - 12 = 0$?
- A. $-4/3, 3$ B. $-3, 4$ C. $4/3, 3$ D. $-4/3, -3$ E. NOTA

17. What is the equation (in slope-intercept form) of the line with x-intercept at $x = 3$ containing the point $(5,8)$?
- A. $y = 3x - 7$ B. $y = 4x - 12$
 C. $y = 2x - 2$ D. $y = x + 3$ E. NOTA
18. When $x^5 - 2x^4 + 3x^3 - 2x + 20$ is divided by $(x-2)$, the remainder can be written as $\frac{G}{(x-2)}$. The value of G is equivalent to which of the following?
- A. -64 B. 40 C. 28 D. 108 E. NOTA
19. Given that $(3\beta + 4)^4 - (3\beta + 4)^3 = 0$. Let α = the sum of all real values of β which make the statement true. Which of the following is true of α ?
- A. $0 < \alpha < 1$ B. $-1 < \alpha < 0$
 C. $-2 < \alpha < -1$ D. $-3 < \alpha < -2$ E. NOTA
20. Given that Q% of 300 is 60, what is the numerical value of Q?
- A. 20 B. 50 C. 150 D. 500 E. NOTA
21. $(4\sqrt{k} + 3) \cdot (4\sqrt{k} - 3) = 39$. The real value of k is equal to which of the following?
- A. 12 B. 9 C. 4 D. 3 E. NOTA
22. Given that $2x + 3y = 23$ and $3x + 2y = 22$, then the sum of x and y is equal to which of the following?
- A. -1 B. 1 C. 8 D. 9 E. NOTA
23. The absolute value of $(3h + 5)$ is less than or equal to 4. Solve for h.
- A. $h \leq -1/3$ B. $h \geq 1/3$ C. $1/3 \leq h \leq 3$ D. $-3 \leq h \leq -1/3$ E. NOTA
24. If $w + j = 10$ and $w + k = 7$ and $j + k = 11$, then $w + 2j - 3k =$
- A. 3 B. 5 C. 37 D. 57 E. NOTA
25. If $(b + d)^2 = 225$, $(b - d) = 3$, and $b, d \geq 0$, then $4b - 3d =$
- A. Not Enough Information B. -3
 C. 18 D. 54 E. NOTA

26. Which of the following is/are true, given the following definitions of \diamond , \heartsuit , and $f(x)$?

$$\diamond = \{ (1,0), (0,1), (3,6), (6,2) \}$$

$$\heartsuit = \{ (3,4), (6,2), (9,7) \}$$

$$f(x) = x^2 + 1$$

- I. The relation \diamond is a function.
- II. The domain of the relation \heartsuit is 2,3,4,6,7,9.
- III. The domain of $f(x)$ is all real numbers.
- IV. $f(x)$ can be any real number.

- A. I only B. IV only C. II, III only D. I, III only E. NOTA

27. Solve for x: $7(x + 4) - 3x + 10 \cdot \frac{(14-x)}{2} + x^2 = -3(2 - x) + x(x + 7) - 6$.

- A. 10 B. 22 C. 22.5 D. 36 E. NOTA

28. Simplify: $\frac{(q+5)}{(5+q)} + \frac{(3-n)}{(n-3)} - \frac{(4s-2)}{(1-2s)} =$

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

29. Factor completely the expression $(256x^8 - 81y^{12})$ using integral coefficients.

- A. $(256x^8 - 81y^{12})$
 B. $(16x^4 + 9y^6)(16x^4 - 9y^6)$ C. $(16x^4 + 9y^6)(4x^2 - 3y^3)(4x^2 + 3y^3)$
 D. $(16x^4 + 9y^6)(4x^2 - 9y^3)(4x^2 + 9y^3)$ E. NOTA

30. If $j!$ denotes j factorial, then the value of $\frac{6!}{(2!) \cdot (3!)}$ is equivalent to which of the following?

- A. 120 B. 60 C. 2 D. 1 E. NOTA