For all questions, answer choice “E. NOTA" means none of the above answers is correct.

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| 1. | If f(x) = 3x2 + 4x – 7, what is f(1)?   1. -7 2. 0 3. 10 4. 20 5. NOTA |  |
| 2. | Which of the following y-values is not within the range of ?  A) 3  B) 4  C) 7  D) 12  E) NOTA |  |
| 3. | If f(x) = 5x-2, then find f(x + 4) – f(x).  A) f(x) + 4  B) 24f(x)  C) f(x)  D) 624f(x)  E) NOTA |  |
| 4. | On the graph of f(x) = x2 + 2, what is the maximum value of x that exists within the range of [2, 18]?  A) 0  B) 2  C) 4  D) 18  E) NOTA |  |
| 5. | Find the product of all of the possible rational zeros of the function  f(x) = 3x3 – ax + 7 given that a is an integer.  A)  B)  C)  D)  E) NOTA |  |
| 6. | . Find x.  A) 8  B) 60  C) 108  D) 109  E) NOTA |  |
| 7. | What is the domain of  ?  A)  B)  C)  D)  E) NOTA |  |
| 8. | How many asymptotes are in the graph of ?  A) 0  B) 1  C) 2  D) 3  E) NOTA |  |
| 9. | **Refer to the following information for #9 – 10:**  f(x), g(x), and h(x) are all continuous functions with domains containing all real numbers. h(x) is an even function. f(x) is cubic. f(x) and g(x) are neither even nor odd functions.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | X | 0 | 1 | 3 | 4 | | f(x) | 1 | A | -26 | -63 | | g(x) | -3 | -1 | B | 5 | | h(x) | 0 | C | 36 | 64 |   If  , then what is equal to?  A) -4  B) -3  C) 3  D) 4  E) NOTA |  |
| 10. | Find the product of  .  A)  B)  C)  D)  E) NOTA |  |
| 11. | If , then . Which of the following is a possible function for g(x)?  A)  B)  C)  D)  E) NOTA |  |
| 12. | Given  f(x) = 21x4 + 32x3 – 26x2 – 32x + 5, find the sum of the product of the roots and the sum of the roots.  A)  B)  C)  D)  E) NOTA |  |
| 13. | If f(x) = x2 and g(x) = 1 – x, find .  A) -22  B)  C) -8  D) 50  E) NOTA |  |
| 14. | What is the remainder when  x5 – 3x2 + x + 1 is divided by x – 4?  A) -1075  B) -115  C) 21  D) 971  E) NOTA |  |
| 15. | If , then what is  A) -2  B)  C) 3  D) 6  E) NOTA |  |
| 16. | How many of the following can never be even functions?  I. Quadratic II. Cubic  III. Exponential IV. Logarithmic  A) 0  B) 1  C) 2  D) 3  E) NOTA |  |
| 17. | If the function f(x) is shifted to the right three coordinates and down six coordinates, the resulting function is:  A)  B)  C)  D)  E) NOTA |  |
| 18. | Which of the following equations is not a function?  A)  B)  C)  D)  E) NOTA |  |
| 19. | For  , find  A) -267  B) -117  C) -18  D) 18  E) NOTA |  |
| 20. | Which of the following is not a coordinate on the graph of  f(x) = (where denotes greatest integer function)?  A)  B)  C)  D)  E) NOTA |  |
| 21. | If and , how many x and y intercepts does have?  A) 0  B) 1  C) 2  D) 3  E) NOTA |  |
| 22. | For , find the x value for which .  A)  B)  C)  D)  E) NOTA |  |
| 23. | Decompose into . Find A+B+C3.  A) -125  B) -121  C) -5  D) -1  E) NOTA |  |
| 24. | What is the equation of the parabola that contains the points (1,4) , (4,5) , and (2,2)?  A)  B)  C)  D)  E) NOTA |  |
| 25. | Find the fifth term in the binomial expansion of (6a – 2b)6 .  A) -2880ab5  B) -1152ab5  C) 3456a2b4  D) 8640a2b4  E) NOTA |  |
| 26. | For what values of x is ?  A)  B)  C)  D)  E) NOTA |  |
| 27. | Let. What value(s) can be when and ?  A) 1  B) 2  C)  D)  E) NOTA |  |
| 28. | Given that , what is the expression of ?  A)  B)  C)  D)  E) NOTA |  |
| 29. | For , equals:  A) 40  B) 80  C)  D)  E) NOTA |  |
| 30. | gives triple the percent of increase when 456 is increased to x. What is?  A) 75  B) 135  C) 225  D) 375  E) NOTA |  |
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