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) 3B) 4C) 7 D) 12E) NOTA |  |
| 3. | If f(x) = 5x-2, then find f(x + 4) – f(x).A) f(x) + 4B) 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) 0B) 2C) 4D) 18E) 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) 8B) 60C) 108D) 109E) NOTA |  |
| 7. | What is the domain of  ?A) B) C) D) E) NOTA |  |
| 8. | How many asymptotes are in the graph of ?A) 0B) 1C) 2D) 3E) 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) -4B) -3C) 3D) 4E) 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) -22B) C) -8D) 50E) NOTA |  |
| 14. | What is the remainder when x5 – 3x2 + x + 1 is divided by x – 4?A) -1075 B) -115C) 21D) 971E) NOTA |  |
| 15. | If , then what is A) -2B) C) 3D) 6E) NOTA |  |
| 16. | How many of the following can never be even functions?I. Quadratic II. Cubic III. Exponential IV. LogarithmicA) 0B) 1C) 2D) 3E) 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) -267B) -117C) -18D) 18E) 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) 0B) 1C) 2D) 3E) NOTA |  |
| 22. | For , find the x value for which . A) B) C) D) E) NOTA |  |
| 23. | Decompose into . Find A+B+C3.A) -125B) -121C) -5D) -1E) 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) -1152ab5C) 3456a2b4D) 8640a2b4E) NOTA |  |
| 26. | For what values of x is ?A) B) C) D) E) NOTA |  |
| 27. | Let. What value(s) can be when and ?A) 1B) 2C) D) E) NOTA |  |
| 28. | Given that , what is the expression of ?A) B) C) D) E) NOTA |  |
| 29. | For , equals:A) 40B) 80C) D) E) NOTA |  |
| 30. |  gives triple the percent of increase when 456 is increased to x. What is?A) 75B) 135C) 225D) 375E) NOTA |  |
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