Mindworkzz
Great Teachers, Great Content!!

Must Know Series- Algebra

Q1. If the real root of the cubic equation $8a^3 - 12a^2 - 6a - 1 = 0$ is expressed as $(p^{1/3} + q^{1/3} + 1)/r$ where p, q, r are natural numbers, what is the value of p + q + r?
Answer:8

Q2. In how many ways can a pair of integers (x , a) be chosen such that $x^2 - 2|x| + |a-2| = 0$?

A. 6
B. 5
C. 4
D. 7

Answer: D

Q3. The number of pairs of integers (x, y) satisfying $x \geq y \geq -20$ and $2x + 5y = 99$
Answer:17

Q4. The value of $\log_a(b) + a \log_b(a)$, for $1 < a \leq b$ cannot be equal to

A. 0
B. -1
C. 1
D. -0.5

Answer: C

Q5. Let $f(x) = x^2 + ax + b$ and $g(x) = f(x + 1) - f(x - 1)$ $f(x) \geq 0$. If for all real x, and g(20) = 72. then the smallest possible value of b is

A. 16
B. 4
C. 1
D. 0

Answer: B

Q6. If $f(x + y) = f(x)f(y)$ $f(5) = 4$ and , then $f(10) - f(-10)$ is equal to

A. 14.0625
B. 0
C. 15.9375
D. 3

Answer: C

MINDWORKZZ

Q7. How many pairs(a, b) of positive integers are there such that a ≤ b and ab = 4^2017?

A. 2018
B. 2019
C. 2017
D. 2020

Answer: A

Q8. If f(5 + x) = f(5 − x) for every real x, and f(x) = 0 has four distinct real roots, then the sum of these roots is

A. 0
B. 40
C. 10
D. 20

Answer: D

Q9. If $\log_4 5 = (\log_4 y)(\log_6 5^{(1/2)})$, then y equals
Answer:36

Q10. The area of the region satisfying the inequalities $|x| - y \le 1$, $y \ge 0$ and $y \le 1$ is
Answer:3

Q11. How many distinct positive integer-valued solutions exist to the equation $(X^2 - 7x + 11)(X - 13x + 42) = ?$

A. 8
B. 4
C. 2
D. 6

Answer: D

Q12. The number of real-valued solutions of the equation $2^x + 2^{-x} = 2 - (x - 2)^2$ is:

A. 1
B. 2
C. Infinite
D. 0

Answer: D

Q13. If Y is a negative number such that , then Y equals to:

A. log2(1/5)
B. log2 (1/3)
C. -log2(1/5)
D. -log2(1/3)

Answer: B

MINDWORKZZ

Q14. For real values of x and y, a function f(x^2 – y^2, x + y) = x/y, then the value of f(x,y) is
Answer: (x+y^2)/(y^2-x)

Q15. How many integral values of x satisfy the following inequality $(x - 2)(x - 4)^2 (x + 6)^3$ ..... $(x – 20)^{10}/(x + 2)(x + 4)^2 (x + 6)^3$ ..... $(x +20)^{10} < 0$

A. 10
B. 11
C. 12
D. 13

Answer: B

Q16. Fn is defined as the set {2n + 6, 3n + 5 } where n is a natural number less than or equal to 500. For how many values of n will Fn and Fn+1 have one element each which is divisible by 7?
Answer:72

Q17. For a cubic function f(x), f(1)=f(2)=f(3)=2 and f(4)=14, then find the value of f(5)
Answer:50

Q18. For all real value of x and y, f(x+y) = f(x)+f(y). If f(3)+f(4)+f(5)+.....f(11) = 189, then find the value of f(15).

A. 15
B. 45
C. 90
D. 60

Answer: B

Q19. If f(x) = x^2 + 7x + 10, then the number of real roots of f(f(f(x))) = 0 is

A. 0
B. 4
C. 2
D. 3

Answer: A

Q20. The number of integer values of 'a' for which both the roots of the equation ax^2 + (a − 4)x+a+1 = 0 are greater than 0 is
Answer:1

Q21. Find the number of consecutive zeros after the decimal in the number $1/40^{34}$, given that log2=0.3010
Answer:54

MINDWORKZZ