JEE MAIN : CHAPTER WISE TEST-2

SUBJECT :- MATHEMATICS **DATE...**
CLASS :- 11th **NAME...**
CHAPTER :- BASIC MATHS **SECTION..**

(SECTION A)

1. The product of all the integers which do not belong to the solution set of the inequality $\left|\dfrac{3\,|x| - 2}{|x| - 1}\right| \geq 2$ is

(A) –1 (B) –4 (C) 4 (D) 0

2. Let f(x) = |x – 2| and g(x) = |3 – x| and

A be the number of real solutions of the equation f(x) = g(x)
B be the minimum value of h(x) = f(x) + g(x)
C be the area of triangle formed by f(x) = |x – 2|, g(x) = |3 – x| and x-axis and $\alpha < \gamma < \beta < \delta$ where $\alpha < \beta$ are the roots of f(x) = 4 and $\gamma < \delta$ are the roots of g(x) = 4, then the value of sum of digits of $\dfrac{\alpha^2+\beta^2+\gamma^2+\delta^2}{ABC}$.

(A) 7 (B) 8 (C) 11 (D) 9

3. The number of solution of the equation $\log_3|x - 1| \cdot \log_4|x - 1| \cdot \log_5|x - 1| = \log_5|x - 1| + \log_3|x - 1| \cdot \log_4|x - 1|$ are

(A) 3 (B) 4 (C) 5 (D) 6

4. Find the number of all the integral solutions of the inequality $\dfrac{(x^2+2)(\sqrt{x^2-16})}{(x^4+2)(x^2-9)} \leq 0$

(A) 1 (B) 2 (C) 3 (D) 4

5. Find the complete solution set of the inequality $\dfrac{1-\sqrt{21-4x-x^2}}{x+1} \geq 0$

(A) $\left[2\sqrt{6}-2,\ 3\right]$

(B) $\left[-2\ \ -2\sqrt{6},\ -1\right)$

(C) $\left[-2-2\sqrt{6}, -1\right] \cup \left[2\sqrt{6}-2,\ 3\right]$

(D) $\left[-2\ \ -2\sqrt{6},\ -1\right) \cup \left[2\sqrt{6}-2,\ 3\right]$

6. The solution set of the inequality $\dfrac{|x+2|-|x|}{\sqrt{4-x^3}} \geq 0$ is

(A) $[-1, \sqrt[3]{4})$ (B) $[1, \sqrt[3]{4})$
(C) $[-1, \sqrt[3]{2})$ (D) $[0, \sqrt[3]{4})$

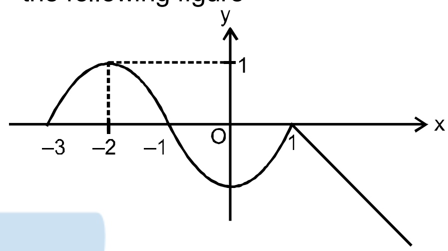
7. The number of integers satisfying the inequality $\sqrt{\log^2_{1/2} x + 4\log_2\sqrt{x}} < \sqrt{2}\,(4 - \log_{16}x^4)$ are

(A) 2 (B) 3 (C) 4 (D) 5

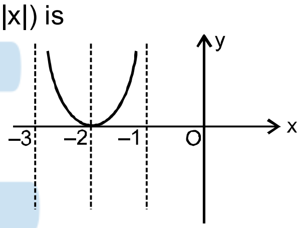
8. If $f_1(x) = |\,|x| - 2|$ and $f_n(x) = |f_{n-1}(x) - 2|$ for all $n \geq 2$, $n \in N$, then number of solution of the equation $f_{2015}(x) = 2$ is

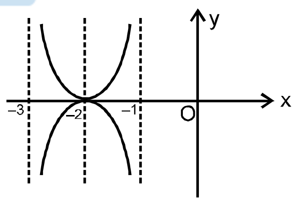
(A) 2015 (B) 2016
(C) 2017 (D) 2018

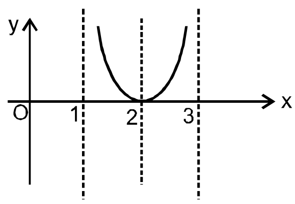
9. If graph of y = f(x) in (–3,1), is as shown in the following figure

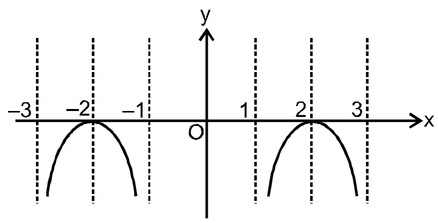


and g(x) = ℓn(f(x)), then the graph of y = g(– |x|) is

(A)


(B)


(C)


(D)


10. The equation $||x - a| - b| = c$ has four distinct real roots, then

(A) a > b – c > 0 (B) c > b > 0
(C) a > c + b > 0 (D) b > c > 0

11. Number of the solution of the equation $2^x = |x - 1| + |x + 1|$ is
(A) 0 (B) 1 (C) 2 (D) ∞

12. Number of integral values of 'x' satisfying the equation $3^{|x+1|} - 2.3^x = 2.|3^x - 1| + 1$ are
(A) 1 (B) 2 (C) 3 (D) 4

13. $|x^2 + 6x + p| = x^2 + 6x + p \ \forall\ x \in R$ where p is a prime number then least possible value p is
(A) 7 (B) 11 (C) 5 (D) 13

14. If $(\log_{10}x)^2 - 4|\log_{10}x| + 3 = 0$, the product of roots of the equation is :
(A) 3 (B) 10^4 (C) 10^8 (D) 1

15. The equaiton $||x - 1| + a| = 4$ can have real solutions for x if a belongs to the interval
(A) $(-\infty, 4]$
(B) $(4, \infty)$
(C) $(-4, \infty)$
(D) $(-\infty, -4) \cup (4, \infty)$

16. The number of values of x satisfying the equation $|2x + 3| + |2x - 3| = 4x + 6$, is
(A) 1 (B) 2 (C) 3 (D) 4

17. Number of prime numbers satisfying the inequality $\log_3 \frac{|x^2 - 4x| + 3}{x^2 + |x - 5|} \geq 0$ is equal to
(A) 1 (B) 2 (C) 3 (D) 4

18. If $|x + 2| + y = 5$ and $x - |y| = 1$ then the value of $(x + y)$ is
(A) 1 (B) 2 (C) 3 (D) 4

19. The number of value of x satisfying the equation $|x - 1|^A = (x - 1)^7$, where $A = \log_3 x^2 - 2\log_x 9$
(A) 1 (B) 2 (C) 0 (D) 3

20. The number of integral value of x satisfying the equation $|\log_{\sqrt{3}} x - 2| - |\log_3 x - 2| = 2$
(A) 1 (B) 2 (C) 3 (D) 4

(SECTION B)

21. The value of $81^{(1/\log_5 3)} + 27^{\log_9 36} + 3^{4/\log_7 9}$ is equal to

22. If $\log_5 a.\log_a x = 2$, then x is equal to

23. If $A = \log_2 \log_2 \log_4 256 + 2\log_{\sqrt{2}} 2$, then A is equal to

24. If $a^x = b, b^y = c, c^z = a$, then value of xyz is

25. If $\log_{10} 2 = 0.30103, \log_{10} 3 = 0.47712$, the number of digits in $3^{12} \times 2^8$ is

26. If *a, b, c* are distinct positive numbers, each different from 1, such that $[\log_b a \log_c a - \log_a a] + [\log_a b \log_c b - \log_b b] + [\log_a c \log_b c - \log_c c] = 0$, then abc =

27. The number of real values of the parameter k for which $(\log_{16} x)^2 - \log_{16} x + \log_{16} k = 0$ with real coefficients will have exactly one solution is

28. If $\left(\frac{2}{3}\right)^{x+2} = \left(\frac{3}{2}\right)^{2-2x}$, then x =

29. If $x^y = y^x$, then $(x/y)^{(x/y)} = x^{(x/y)-k}$, where k =

30. The remainder obtained when the polynomial $1 + x + x^3 + x^9 + x^{27} + x^{81} + x^{243}$ is divided by $x - 1$ is