

JEE Main 2025

Mathematics

Live Quiz

Practice Test - 17

1. Identify odd function.

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

(B) $f(x) = x \sin x + x^3$

(C) $f(x) = \sec\left(\log\left(\sqrt{1+x^2} - x\right)\right)$

(D) $f(x) = \tan\left(\log\left(\sqrt{1+x^2} - x\right)\right)$

2. If $f(x)$ is a function which is even and odd both, then $f(3) - f(2)$ equals.

(A) 1

(B) -1

(C) 0

(D) 2

3. Period of $f(x) = \{x\} + \{2x\} + \{3x\}$ is : (where $\{.\}$ represents fractional part of x)

(A) $\frac{1}{3}$

(B) $\frac{1}{2}$

(C) 1

(D) No fundamental period

4. The domain of function $f(x) = \sqrt{\log_2\left(\log_2\left(\frac{x}{x^2+1}\right)\right)}$ is :

(A) $x > 0$

(B) $x \in (0, 1)$

(C) $x \in R$

(D) $x \in \phi$

5. If $f(x) = [x] - [2x] \forall x \in [0, 2]$ then range of $f(x) \forall x \in [0, 2]$. (where $[.]$ represents greatest integer function)

(A) $\{-2, -1, 0\}$

(B) $\{-2, -1, 0, 1\}$

(C) $\{-1, 0, 1, 2\}$

(D) $\{-1, 0, 1\}$

6. If $f(x) = \max\{x^2, 4 - x^2, 3\} \forall x \in [-2, 2]$, then $f(x)$ is piecewise form is :

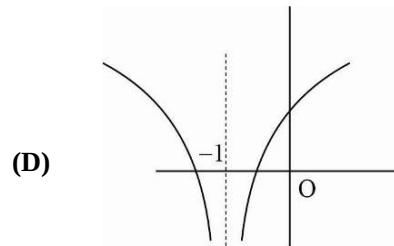
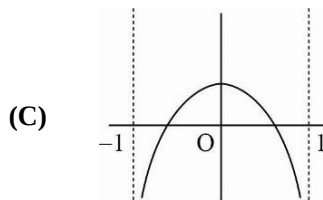
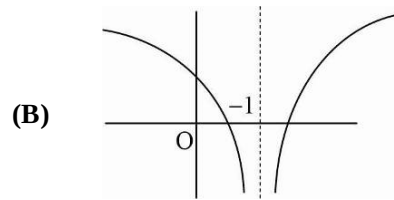
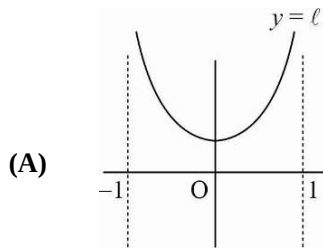
(A) $f(x) = \begin{cases} x^2 & -2 \leq x \leq -\sqrt{2} \\ 4 - x^2 & -\sqrt{2} < x < \sqrt{2} \\ x^2 & \sqrt{2} \leq x \leq 2 \end{cases}$

(B) $f(x) = \begin{cases} x^2 & -2 \leq x \leq -\sqrt{3} \\ 3 & -\sqrt{3} \leq x < -1 \\ 4 - x^2 & -1 \leq x \leq 1 \\ 3 & 1 < x \leq \sqrt{3} \\ x^2 & \sqrt{3} < x \leq 2 \end{cases}$

(C) $f(x) = \begin{cases} x^2 & -2 \leq x \leq -\sqrt{3} \\ 3 & -\sqrt{3} < x < -\sqrt{2} \\ 4 - x^2 & -\sqrt{2} \leq x \leq \sqrt{2} \\ 3 & \sqrt{2} < x \leq \sqrt{3} \\ x^2 & \sqrt{3} < x \leq 2 \end{cases}$

(D) $f(x) = \begin{cases} x^2 & -2 \leq x \leq -\sqrt{2} \\ 3 & -\sqrt{2} < x < -1 \\ 4 - x^2 & -1 \leq x \leq 1 \\ 3 & 1 < x \leq \sqrt{2} \\ x^2 & \sqrt{2} < x \leq 2 \end{cases}$

7. The rough graph of the function $y = \log_e(1 - |x|) + 1$.



8. The range of function $y = \{x\} + \{-x\} - 1$, (where $\{.\}$ represents fractional part of x)

- (A) $\{-1, 0, 1\}$ (B) $\{-1, 0\}$
(C) $\{0, 1\}$ (D) $\{0\}$

9. The period of $f(x)$ where $f(x) = \sin^6 x + \cos^6 x + 3\sin^2 x \cos^2 x + 2$

- (A) 2π (B) π
(C) $\frac{\pi}{2}$ (D) No fundamental period

10. If $f(x) = \left[\cos \frac{\pi x}{2} \right]$, then number of values of x in $x \in [0, 4]$ where graph of $f(x)$ is broken

(discontinuity) (where $[.]$ represents greatest integer function)

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

11. For a real number x , $[x]$ denotes the integral part x . The value of

$$\left[\frac{2}{3} \right] + \left[\frac{2}{3} + \frac{1}{100} \right] + \left[\frac{2}{3} + \frac{2}{100} \right] + \left[\frac{2}{3} + \frac{3}{100} \right] + \dots + \left[\frac{2}{3} + \frac{150}{100} \right] \text{ is :}$$

- (A) 131 (B) 116 (C) 50 (D) None of these

12. $f(x) = \sin \left\{ \left[\operatorname{sgn}(x^2 - 1) \right] \frac{\pi}{2} \right\}$

where $[.]$ represents greatest integer function, then $f(x)$ in piecewise form is :

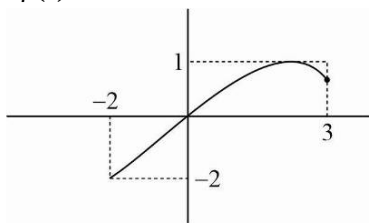
(A) $f(x) = \begin{cases} 1 & x < -1 \\ -1 & -1 \leq x \leq 1 \\ 1 & x > 1 \end{cases}$

(B) $f(x) = \begin{cases} 1 & x \leq -1 \\ -1 & -1 < x < 1 \\ 1 & x \geq 1 \end{cases}$

(C) $f(x) = \begin{cases} 1 & x < -1 \\ -1 & -1 < x < 1 \\ 1 & x > 1 \\ 0 & x = \pm 1 \end{cases}$

(D) $f(x) = \begin{cases} -1 & x \leq 1 \\ +1 & -1 \leq x \leq 1 \\ -1 & x > 1 \end{cases}$

13. Graph of $f(x)$ is shown below :



The domain of the function

$$y = f(|x - 2| + 1) \text{ is :}$$

- (A) $x \in [-2, 2]$ (B) $[-3, 2]$ (C) $x \in [0, 4]$ (D) $x \in [-1, 3]$
14. The period of the function $f(x) = \{x\} + \sin \frac{\pi x}{3} + \tan 2x$ is: $\{\bullet\}$ denotes fractional part function.
- (A) 1 (B) 2 (C) 3 (D) Not periodic
15. Total number of solution of $x^2 - 2x - [x] = 0$ is equal to: $[\bullet]$ denotes greatest integer function.
- (A) 2 (B) 4 (C) 6 (D) None of these

Answers

1	2	3	4	5	6
D	C	C	D	A	C
7	8	9	10	11	12
C	B	D	B	D	C
13		14		15	
C		D		D	