

1. Solution of  $|x-1| \geq |x-3|$  is

(1)  $x \leq 2$

(2)  $x \geq 2$

(3)  $[1, 3]$

(4)  $[1, 3]$

2. Solve for  $x$ :  $\left| \frac{x^2+6}{5x} \right| \geq 1$

(1)  $(-\infty, -3)$

(2)  $(-\infty, -3) \cup (3, \infty)$

(3)  $R$

(4)  $(-\infty, -3] \cup [-2, 0) \cup (0, 2] \cup [3, \infty)$

3. The solution set of the inequality,  $2 - \log_2(x^2 + 3x) \geq 0$  is

(1)  $[-4, 1]$

(2)  $[-4, -3] \cup (0, 1]$

(3)  $(-\infty, -3) \cup (1, \infty)$

(4)  $(-\infty, -4) \cup [1, \infty)$

4. Set of all real values of  $x$  satisfying the in equation  $\frac{\log_2(x^2-5x+4)}{\log_2(x^2+1)} > 1$  is

(1)  $(-\infty, \frac{3}{5}) - \{0\}$

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

(3)  $(\frac{3}{5}, \infty)$

(4)  $(4, \infty)$

5. The set of real values of  $x$  for which  $\log_{0.2} \frac{x+2}{x} \leq 1$  is

(1)  $(-\infty, \frac{-5}{2}] \cup (0, \infty)$

(2)  $[\frac{5}{2}, +\infty)$

(3)  $(-\infty, -2) \cup (0, \infty)$

(4) None of these

6. The solution set of  $x - \sqrt{1-|x|} < 0$ , is

(1)  $[-1, \frac{-1+\sqrt{5}}{2})$

(2)  $[-1, 1]$

(3)  $[-1, \frac{-1+\sqrt{5}}{2}]$

(4)  $(-1, \frac{-1+\sqrt{5}}{2})$

7. Let  $[x]$  denote the greatest integer  $\leq x$ . If  $f(x) = [x]$  and  $g(x) = |x|$ , then the value of  $f(g(\frac{8}{5})) - g(f(\frac{8}{5}))$  is

(1) 2

(2) -2

(3) 1

(4) -1

8. If  $y = 3[x] + 1 = 4[x-1] - 10$ , where  $[\cdot]$  represents greatest integer function, then  $[x+2y]$  is

(1) 76

(2) 61

(3) 107

(4) 67

9. If  $[x]^2 - 5[x] + 6 = 0$ , where  $[\cdot]$ , denotes the greatest integer function, then

(1)  $x \in [3, 4]$ .

(2)  $x \in (2, 3]$ .

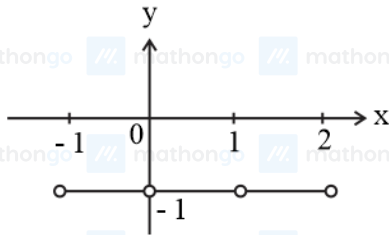
(3)  $x \in [2, 3]$ .

(4)  $x \in [2, 4]$ .

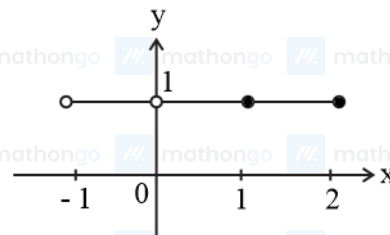
(5)  $x \in R$ .

10. Graph of  $y = \{x\} + \{-x\}$  in the interval  $[-1, 2]$  is (where  $\{\cdot\}$  denotes fractional part function).

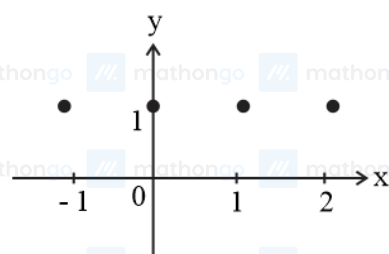
(1)



(2)



(3)



(4)

