

NEW STANDARD ACADEMY

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CLASS 11 (MATH'S) DPP:-3

1. The domain of the fraction $f(x) = \left[\log_{10} \left(\frac{5x-x^2}{4} \right) \right]^{1/2}$ is

- a) $-\infty < x < \infty$ c) $1 \leq x \leq 4$
 b) $4 \leq x \leq 16$ d) $-1 \leq x \leq 1$

2. The domain of the fraction $f(x) = \frac{\sin^{-1}(3-x)}{\ln(|x|-2)}$ is

- a) $[2,4]$ c) $(2,3) \cup (3,4]$
 b) $[2,\infty)$ d) $(-\infty, 3) \cup [2, \infty)$

3. The domain of $f(x) = \log|\log x|$ is

- a) $(0, \infty)$ c) $(1, \infty)$
 b) $(0,1) \cup [1, \infty)$ d) $(-\infty, 1)$

4. The domain of $f(x) = \frac{\log_2(x+3)}{x^2+3x+2}$ is

- a) $\mathbb{R} - \{-1, -2\}$ c) $(-2, \infty)$
 b) $\mathbb{R} - \{-1, -2, -3\}$ d) $(-3, \infty) - \{-1, -2\}$

5. The domain of the function $f(x) = \frac{1}{\sqrt{10c_x - 1 - 3 \times 10^c x}}$

Contain the points

- a) 9, 10, 11 c) 9, 10, 12
 b) All natural numbers d) None of these

6. The domain of the function $f(x) = \frac{x}{\sqrt{\sin(\ln x) - \cos(\ln x)}} (n \in \mathbb{Z})$ is

7. The range of $f(x) = \sin^{-1} \left(\frac{x^2+1}{x^2+2} \right)$ is

- a) $[0, \pi/2]$ c) $(0, \pi/6)$
 b) $[\pi/6, \pi/2]$ d) None of these

8. The domain of $f(x) = \cos^{-1} \left(\frac{2-|x|}{4} \right) + [\log(3-x)]^{-1}$ is

- a) $[-2, 6]$ c) $[-6, 2) \cup (2, 3)$
 b) $[-6, 2]$ d) $[-2, 2] \cup (2, 3)$

9. The domain of the function

$$f(x) \log_2 \left(-\log_{1/2} \left(1 + \frac{1}{x^{1/4}} \right) - 1 \right) \text{ is}$$

- a) $(0, 1)$ c) $(0, 1]$
 b) $[1, \infty)$ d) $(1, \infty)$

10. The range of $f(x) = \sin^{-1}(\sqrt{x^2 + x + 1})$ is

- a) $\left(0, \frac{\pi}{2}\right]$ c) $\left(0, \frac{\pi}{3}\right]$
 b) $\left[\frac{\pi}{3}, \frac{\pi}{2}\right]$ d) $\left[\frac{\pi}{6}, \frac{\pi}{3}\right]$

11. The range of $\sin^{-1} \left[x^2 + \frac{1}{2} \right] + \cos^{-1} \left[x^2 - \frac{1}{2} \right]$, where $[\cdot]$ denotes the greatest integer function is

- a) $\left\{ \frac{\pi}{2}, \pi \right\}$ c) $\{ \pi \}$
 b) $\left\{ \frac{\pi}{2} \right\}$ d) None of these

12. The domain of $f(x) = \ln(ax^3 + (a+b)x^2 + (b+c)x + c)$ where $a > 0$, $b^2 - 4ac = 0$, is (where $[\cdot]$ represents greatest integer function).

13. The number of functions from the set $A = \{x \in \mathbb{N} : x^2 - 10x + 9 \leq 0\}$ to the set $B = \{n^2 : n \in \mathbb{N}\}$ such that $f(x) \leq (x-3)^2 + 1$, for every $x \in A$, is

14. The domain of the function $f(x) = \sin^{-1}[2x^2 - 3] + \log_2 \left(\log_{\frac{1}{2}}(x^2 - 5x + 5) \right)$

Where $[t]$ is the greatest integer function, is

15. The range of $f(x) = [\sin x + [\cos x + [\tan x + [\sec x]]]]$, $x \in (0, \frac{\pi}{4})$, where $[\cdot]$ denotes the greatest integer function $\leq x$, is

- a) $\{0, 1\}$ c) $\{-1, 0, 1\}$
 b) $\{1\}$ d) None of these