

سوال یک ۸

$$1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6$$

$$f(x) = \sqrt{\frac{x-1}{x} - \frac{x}{x-1}} \quad \frac{x-1}{x} \rightarrow x \neq 0 \quad \frac{x}{x-1} \rightarrow x \neq 1$$

$$\frac{x-1}{x} - \frac{x}{x-1} \geq 0 \rightarrow \frac{(x-1)^2 - x^2}{x(x-1)} \geq 0 \rightarrow \frac{(x-1-x)(x-1+x)}{x(x-1)} \geq 0$$

$$\frac{-2x+1}{x(x-1)} \geq 0 \quad \frac{0}{+} - \frac{1}{-} + \frac{1}{+} = \rightarrow D_f = (-\infty, 0) \cup \left[\frac{1}{2}, 1\right)$$

$$7 \quad 8 \quad 9 \quad 10$$

$$f(x) = \frac{1}{x+1} - \frac{2}{x} \quad \frac{1}{x+1} \rightarrow x \neq -1 \quad \frac{2}{x} \rightarrow x \neq 0$$

$$\frac{1}{x-1} + \frac{1}{x+2} \quad \frac{1}{x-1} \rightarrow x \neq 1 \quad \frac{1}{x+2} \neq 0$$

$$\frac{1}{x-1} + \frac{1}{x+2} = \frac{x^2 + x + x - 1}{x^2 + x - 2} \neq 0 \rightarrow x \neq \frac{-5}{2} \text{ و } 1 \text{ و } -2$$

$$11 \rightarrow D_f = \mathbb{R} - \left\{ -2, \frac{-5}{2}, -1, 0, 1 \right\}$$

سوال دو ۸

$$13 \quad 14 \quad 15$$

$$f(x) = \sqrt{\left(\left(\frac{1}{x}\right)^x - 9\right)(14 - x^2)} \quad \left(\frac{1}{x}\right)^x - 9 = 0 \rightarrow \left(\frac{1}{x}\right)^x = 9 \rightarrow x = -2$$

$$\frac{-2}{+} - \frac{9}{-} + \frac{14}{+} = \rightarrow D_f = (-\infty, -2] \cup \left[\frac{14}{9}, +\infty\right)$$

$$16 \quad 17 \quad 18$$

$$f(x) = \sqrt[3]{x-1} + \sqrt{x+1} = 3 \quad \sqrt{x+1} = 3 - \sqrt[3]{x-1}$$

$$\rightarrow 3 - \sqrt[3]{x-1} \geq 0 \rightarrow \sqrt[3]{x-1} \leq 3 \rightarrow x-1 \leq 27 \rightarrow x \leq 28 \checkmark$$

$$19 \quad 20 \quad 21$$

$$\sqrt[3]{x-1} \geq 0 \rightarrow x-1 \geq 0 \rightarrow x \geq 1 \rightarrow D_f = [1, 28]$$



Genobar

1. سوال نمبر 8

$$f(x) = \frac{\log_e(x^2 - x - 2)}{\sqrt{x^2 - 1} + 1} \quad x^2 - x - 2 > 0 \rightarrow (x-2)(x+1) > 0$$

$$\frac{-1}{+} \frac{2}{-} \rightarrow \text{اسفل}$$

2

$$\sqrt{x^2 - 1} \geq 0 \rightarrow x^2 - 1 \geq 0 \rightarrow (x-1)(x+1) \geq 0$$

$$\frac{-1}{+} \frac{1}{-} \frac{1}{+}$$

3

$$\sqrt{x^2 - 1} + 1 \neq 0 \rightarrow \text{ہیچا صفر نہیں ہوتا}$$

4

$$D_f = (-\infty, -1) \cup (2, +\infty)$$

5

6. سوال نمبر 8

$$f(x) = \sqrt{3 + ax - x^2} \quad \text{بازہ } [-2, b]$$

7

$$f(x) = \sqrt{-x^2 - \frac{1}{p}x + 3}$$

$$\sqrt{3 + (-2a) - 4} = 0 \rightarrow \sqrt{-2a - 1} = 0$$

$$a = -\frac{1}{2}$$

8

$$\frac{c}{a} = \frac{3}{-1} = -3 \rightarrow -2 \times \frac{3}{2} = -3 \rightarrow a + b = \frac{3}{2} - \frac{1}{2} = 1$$

9

$$g(x) = \sqrt{f(x) - x} \quad f(x) = \begin{cases} 3x - 2 & x \geq 1 \\ 2x + 3 & x < 1 \end{cases}$$

10

11

$$f(x) - x \geq 0 \quad \frac{f(x) = 3x - 2}{x \geq 1} \rightarrow 3x - 2 - x \geq 0 \rightarrow 2x \geq 2 \rightarrow x \geq 1$$

12

13

$$f(x) - x \geq 0 \quad \frac{f(x) = 2x + 3}{x < 1} \rightarrow 2x + 3 - x \geq 0 \rightarrow x + 3 \geq 0 \rightarrow x \geq -3$$

14

15

$$D_g = [-3, +\infty) \quad [-3, 1)$$

16

$$f(\sin \frac{\pi}{6} + \cos 2\pi) \quad f(x) = 2x^2 - 4x$$

17

18

$$\sin \frac{\pi}{6} \rightarrow \sin 30^\circ \rightarrow \frac{\sqrt{3}}{2} \quad \cos 2\pi \rightarrow \cos 360^\circ \rightarrow 1$$

19

20

$$f\left(\frac{\sqrt{3} + 1}{2}\right) = 2x\left(\frac{\sqrt{3} + 1}{2}\right)^2 - 4\left(\frac{\sqrt{3} + 1}{2}\right) = \frac{V + 4\sqrt{3}}{2} - 2\sqrt{3} - 2$$

21

22

$$\rightarrow \frac{V + 4\sqrt{3}}{2} + \frac{4\sqrt{3} - 4}{2} = \frac{V + 4\sqrt{3} + 4\sqrt{3} - 4}{2} = \frac{V + 8\sqrt{3} - 4}{2}$$

23

1 $f(x) = \frac{x+1}{x-1}$ $f(f(a)) = a$ $\frac{a+1}{a-1} + 1$ $\frac{2a}{a-1} = a$ سوال هفت - 81

2 $\frac{a+1}{a-1} \rightarrow a \neq 1$ $f\left(\frac{a+1}{a-1}\right) = \frac{\frac{a+1}{a-1} + 1}{\frac{a+1}{a-1} - 1} \rightarrow \frac{2a}{a-1} = a$

3 $\frac{a+1}{a-1} \rightarrow a \neq 1$

4 $D_f = \mathbb{R} - \{1\}$ P

6 $f(g(a)) = -4$ $g(x) = \sqrt{x^2 - 1}$ $f(x) = x^2 - 4x$ سوال هشت - 82

7 $g(a) = \sqrt{a^2 - 1} \rightarrow f(g(a)) = (\sqrt{a^2 - 1})^2 - 4(\sqrt{a^2 - 1}) = -4$

8 $\sqrt{a^2 - 1} = t \rightarrow t^2 - 4t = -4 \rightarrow t^2 - 4t + 4 = 0 \rightarrow (t - 2)^2 = 0 \rightarrow t = 2$ P

9 $\sqrt{a^2 - 1} = 2 \rightarrow a^2 - 1 = 4 \rightarrow a^2 = 5 \rightarrow a = \pm\sqrt{5}$ P

12 $f(x) \times f(-3) = ?$ $f(x+3) = x^2 - 2x + 4$ سوال نه - 83

13 $x+3 = 1 \rightarrow x = -2 \rightarrow f(1) = 1^2 - 2(1) + 4 = 3 \Rightarrow f(1) = 3$

14 $x+3 = -3 \rightarrow x = -6 \rightarrow f(-3) = (-3)^2 - 2(-3) + 4 = 19$

15 $f(-3) \times f(1) = 19 \times 3 = 57$ P

17 $f(\sqrt{3}\cos x + \cos x) = \tan^2 x$ $f(3, 2) = ?$ سوال دهم - 84

18 $\sqrt{3}\cos x + \cos x = \frac{1}{2} \rightarrow 1\cos x + 1\cos x - \frac{1}{2} = 0$ $\frac{-1 \pm \sqrt{1 - 4(-\frac{1}{2})}}{2} = \frac{-1 \pm \sqrt{3}}{2}$

19 $\cos x = \frac{1}{2} \rightarrow x = \frac{\pi}{3}, \frac{2\pi}{3}$ P

20 $f\left(\sqrt{\frac{3}{2}}\right) + \omega\left(\frac{1}{2}\right) = \left(\frac{\sqrt{\frac{3}{2}}}{\frac{1}{2}}\right)^2 \rightarrow \textcircled{3}$

21  Benobar