

19, 75

تاريخ

تکلیف

1

2

3

$$f = \sqrt{4 - \sqrt{2-x}} \quad (الف) \quad 2-x \geq 0 \rightarrow x \leq 2 \quad (1) \text{ دامنه}$$

4

$$4 - \sqrt{2-x} \geq 0 \rightarrow 4 \geq \sqrt{2-x} \rightarrow 16 \geq 2-x \rightarrow x \geq -14$$

$$D_f = [-14, 2] \quad \checkmark$$

(2)

6

$$(ب) \quad \sqrt{3 - \sqrt{x-2}} \quad x-2 \geq 0 \rightarrow x \geq 2$$

8

$$3 - \sqrt{x-2} \geq 0 \rightarrow \sqrt{x-2} \leq 3 \rightarrow x-2 \leq 9 \rightarrow x \leq 11$$

$$D_f = [2, 11] \quad \checkmark$$

10

$$(الف) \quad g = \sqrt{4-2x^2} \quad 4-2x^2 \geq 0 \rightarrow 2x^2 \leq 4 \quad (2) \text{ دامنه}$$

12

$$x^2 \leq 2 \rightarrow -\sqrt{2} \leq x \leq \sqrt{2}$$

$$D_f = [-\sqrt{2}, \sqrt{2}] \quad \checkmark$$

(2)

13

$$(ب) \quad g = \sqrt{3|x|-9} \quad 3|x|-9 \geq 0$$

15

$$\rightarrow |x| \geq 3 \rightarrow x \geq 3 \quad x \leq -3$$

$$D_f = (-\infty, -3] \cup [3, +\infty) \quad \checkmark$$

17

$$(الف) \quad g = \sqrt{\frac{|x|+1}{|x|-3}} \quad |x|-3 \neq 0 \quad (3) \text{ دامنه}$$

19

$$|x| \neq 3 \rightarrow x \neq \pm 3$$

20

$$D_f = \mathbb{R} - \{-3, 3\} \quad \checkmark$$

(2)

$$\rightarrow) y = \frac{\sqrt[3]{\sqrt{x}+1}}{\sqrt{x}-3} \quad x \geq 0$$

$$\sqrt{x}-3 \neq 0 \rightarrow \sqrt{x} \neq 3 \rightarrow x \neq 9$$

$$D_f = [-, +\infty) - \{9\} \quad \checkmark$$

$$\text{الف) } \frac{\sqrt{3-|x|}}{|x|+2} \quad 3-|x| \geq 0 \rightarrow |x| \leq 3 \rightarrow -3 \leq x \leq 3 \quad (4)$$

$$|x|+2 \neq 0 \rightarrow |x| \neq -2 \rightarrow x \neq \pm 2$$

$$D_f = [-3, 3] - \{-2, 2\} \quad \text{همواره برقرار است} \quad (1, 100)$$

$$\rightarrow) y = \frac{\sqrt{4-x^2}}{|x|-1} \quad 4-x^2 \geq 0 \rightarrow x^2 \leq 4 \rightarrow -2 \leq x \leq 2$$

$$|x|-1 \neq 0 \rightarrow |x| \neq 1 \rightarrow x \neq \pm 1$$

$$D_f = [-2, 2] - \{1, -1\} \quad \checkmark$$

$$\text{الف) } y = \frac{x+1}{\sqrt{x+|x|}} \quad x+|x| > 0 \rightarrow \begin{cases} x \geq 0 \rightarrow x+x > 0 \rightarrow x > 0 \\ x < 0 \rightarrow x-x > 0 \quad \times \end{cases} \quad (2)$$

$$D_f = \mathbb{R}^+ \quad \checkmark \quad (2)$$

$$\rightarrow) y = \frac{1}{\sqrt{x|x|}} \quad x|x| > 0 \rightarrow \begin{cases} x > 0 \rightarrow x^2 > 0 \quad \checkmark \\ x \neq 0 \rightarrow 0 > 0 \quad \times \\ x < 0 \rightarrow -x^2 < 0 \quad \times \end{cases}$$

$$D_f = \mathbb{R}^+ \quad \checkmark$$

$$\text{الف) } y = \sqrt{2 - [x]} \quad 2 - [x] \geq 0 \rightarrow [x] \leq 2 \rightarrow x < 3 \quad (6)$$

$$D_f = (-\infty, 2) \quad (2)$$

$$\text{ب) } y = \frac{1}{\sqrt{2 - [x]}} \quad 2 - [x] > 0 \rightarrow [x] < 2 \rightarrow x < 2$$

$$D_f = (-\infty, 2) \quad (2)$$

$$\text{الف) } y = \frac{1}{x[x]} \quad x[x] \neq 0 \quad \begin{cases} x \neq 0 \\ [x] \neq 0 \end{cases} \rightarrow x \neq [0, 1) \quad (7)$$

$$D_f = (-\infty, 0) \cup [1, +\infty) \quad (4)$$

$$\text{ب) } y = \frac{1}{\sqrt{-x[x]}} \quad -x[x] > 0 \quad \begin{array}{l} \text{همیشه مختلف الیاریج} \\ \text{هستند (یعنی } x=0 \text{ که در اینجا راضی نکرد)} \end{array}$$

$$D_f = \emptyset \quad (1)$$

$$\text{الف) } y = \sqrt{\left[x - \frac{1}{3}\right] + \left[x + \frac{2}{3}\right]} \quad (8)$$

$$\left[x - \frac{1}{3}\right] + \left[x + \frac{2}{3}\right] \geq 0 \rightarrow \left[x + \frac{2}{3} - 1\right] + \left[x + \frac{2}{3}\right] \geq 0$$

$$\rightarrow \left[x + \frac{2}{3}\right] - 1 + \left[x + \frac{2}{3}\right] \geq 0 \rightarrow 2\left[x + \frac{2}{3}\right] \geq 1 \rightarrow \left[x + \frac{2}{3}\right] \geq \frac{1}{2}$$

$$\rightarrow x + \frac{2}{3} \geq 1 \rightarrow x \geq \frac{1}{3}$$

$$D_f = \left[\frac{1}{3}, +\infty\right) \quad (2)$$

$$\rightarrow y = \sqrt{\left[x - \frac{1}{r}\right] + \left[-x + \frac{1}{r}\right]} \rightarrow \sqrt{\left[x - \frac{1}{r}\right] + \left[-\left(x - \frac{1}{r}\right)\right]}$$

$$\rightarrow x - \frac{1}{r} = a \text{ if } \begin{cases} a \in \mathbb{Z} & [a] + [-a] = 0 \\ a \notin \mathbb{Z} & [a] + [-a] = -1 \end{cases} \Rightarrow x - \frac{1}{r} \in \mathbb{Z}$$

$$D_f = \left\{ x \mid x = k + \frac{1}{r}, k \in \mathbb{Z} \right\} \checkmark$$

$$\text{الف) } y = \frac{1}{r \sin x - 1} \quad r \sin x - 1 \neq 0 \rightarrow \sin x \neq \frac{1}{r} \quad (9)$$

$$\sin x \neq \pm \frac{1}{r} \Leftrightarrow \sin x \neq \pm \frac{\sqrt{r}}{r}$$

$$D_f = \mathbb{R} - \left\{ \frac{k\pi}{r} + \frac{\pi}{r} \right\} \checkmark \quad (2)$$

$$\rightarrow y = \frac{\cot x + 1}{\tan x + 1} \rightarrow \frac{\frac{\cos x}{\sin x} + 1}{\frac{\sin x}{\cos x} + 1} \quad \sin \neq 0, \cos \neq 0$$

$$\frac{\sin x + 1}{\cos x} + 1 \neq 0 \rightarrow \frac{\sin x}{\cos x} \neq -1$$

$$D_f = \mathbb{R} - \left\{ \frac{k\pi}{r}, k\pi - \frac{\pi}{r} \right\} \checkmark$$

$$\text{الف) } y = \sqrt{r \sin x - 1} \quad r \sin x - 1 \geq 0 \rightarrow r \sin x \geq 1 \rightarrow \sin x \geq \frac{1}{r} \quad (10)$$

$$D_f = \left[\frac{2k\pi + \frac{\pi}{r}}{r}, \frac{2k\pi + \frac{3\pi}{r}}{r} \right] \checkmark \quad (2)$$

$$\rightarrow y = \sqrt{1 - r \cos x} \quad 1 - r \cos x \geq 0 \rightarrow r \cos x \leq 1 \rightarrow \cos x \leq \frac{1}{r}$$

$$D_f = \left[\frac{2k\pi + \frac{\pi}{r}}{r}, \frac{2k\pi + \frac{3\pi}{r}}{r} \right] \checkmark$$