

subject

Year Month Date

()

①

$$\text{الف) } y = \sqrt{4-x} \Rightarrow D_f = [-14, 2]$$

$$\sqrt{4-x} \geq 0 \Rightarrow 4-x \geq 0 \Rightarrow x \leq 4$$

$$4-x \leq 14 \Rightarrow -x \leq 10 \Rightarrow x \geq -10$$

$$\text{ب) } y = \sqrt{x-2} \Rightarrow D_f = [2, 11]$$

$$\sqrt{x-2} \geq 0 \Rightarrow x-2 \geq 0 \Rightarrow x \geq 2$$

$$x-2 \leq 11 \Rightarrow x \leq 13$$

②

$$\text{الف) } y = \sqrt{4-x^2} \Rightarrow 4-x^2 \geq 0 \Rightarrow x^2 \leq 4 \Rightarrow -2 \leq x \leq 2 \Rightarrow D_f = [-2, 2]$$

$$\text{ب) } y = \sqrt{3|x|-9} \Rightarrow 3|x|-9 \geq 0 \Rightarrow 3|x| \geq 9 \Rightarrow |x| \geq 3 \Rightarrow D_f = (-\infty, -3] \cup [3, +\infty)$$

③

$$\text{الف) } y = \sqrt{\frac{x+1}{x-3}} \Rightarrow \frac{x+1}{x-3} \geq 0 \Rightarrow x \neq 3, x \neq -1 \Rightarrow D_f = \mathbb{R} - \{-1, 3\}$$

$$\text{ب) } y = \sqrt{\frac{x+1}{x-3}} \Rightarrow \sqrt{x+1} \geq 0 \Rightarrow x \geq -1 \Rightarrow D_f = [-1, +\infty)$$

$$\text{الف) } y = \sqrt{\frac{3-|x|}{|x|+2}} \Rightarrow \frac{3-|x|}{|x|+2} \geq 0 \Rightarrow |x| \leq 3 \Rightarrow D_f = [-3, 3]$$

20

$$\text{ب) } y = \sqrt{\frac{4-x^2}{|x|-1}} \Rightarrow \frac{4-x^2}{|x|-1} \geq 0 \Rightarrow x^2 \leq 4 \Rightarrow -2 \leq x \leq 2 \Rightarrow D_f = [-2, 2] - \{-1, 1\}$$

④

$$\text{الف) } y = \frac{x+1}{\sqrt{x+|x|}} \Rightarrow x+|x| \geq 0 \Rightarrow x \geq -|x| \Rightarrow \mathbb{R}$$

25

$$\text{ب) } y = \frac{1}{\sqrt{x|x|}} \Rightarrow x|x| \geq 0 \Rightarrow D_f = (0, +\infty)$$

⑤

$$\text{الف) } y = \sqrt{2-[x]} \Rightarrow 2-[x] \geq 0 \Rightarrow [x] \leq 2 \Rightarrow D_f = (-\infty, 2]$$

$$\text{ب) } y = \frac{1}{\sqrt{2-[x]}} \Rightarrow 2-[x] \geq 0 \Rightarrow [x] \leq 2 \Rightarrow (-\infty, 2]$$

⑦

$$\text{الف) } y = \frac{1}{x[x]} \rightarrow x[x] \neq 0$$

این ها همواره مثبت است
 و این ها همواره مثبت است
 و این ها همواره مثبت است

$$D_f = \mathbb{R} - [0, 1) \cup (1, +\infty)$$

$$\text{ب) } \frac{1}{\sqrt{x[x]}} \rightarrow -x[x] > 0 \rightarrow -x > [x] \quad D_f = (-\infty, 0)$$

5

⑧

$$\text{الف) } y = \sqrt{\left[x - \frac{1}{p}\right] + \left[x + \frac{1}{p}\right]} \rightarrow \left[x - \frac{1}{p}\right] + \left[x + \frac{1}{p}\right] \geq 0 \rightarrow \left[x + \frac{1}{p} + 1\right] + \left[x + \frac{1}{p}\right] \geq 0$$

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

10

$$D_f = \left[\frac{1}{p}, +\infty\right)$$

$$\text{ب) } \sqrt{\left[x - \frac{1}{p}\right] + \left[-x + \frac{1}{p}\right]} \rightarrow \left[x - \frac{1}{p}\right] + \left[-x + \frac{1}{p}\right] \geq 0 \rightarrow \begin{cases} a \in \mathbb{Z} \rightarrow [a] + [-a] = 0 \\ a \notin \mathbb{Z} \rightarrow [a] + [-a] = -1 \end{cases} \Rightarrow x - \frac{1}{p} \in \mathbb{Z}$$

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

⑨¹⁵

$$\text{الف) } y = \frac{1}{\sqrt{2\sin^2 x - 1}} \Rightarrow 2\sin^2 x - 1 \neq 0 \rightarrow 2\sin^2 x \neq 1 \rightarrow \sin^2 x \neq \frac{1}{2} \rightarrow \sin x \neq \pm \frac{1}{\sqrt{2}}$$

$$\rightarrow D_f = \emptyset$$

$$\text{ب) } y = \frac{\cot x + 1}{\tan x + 1} \Rightarrow \tan x \neq -1 \rightarrow \frac{\sin x}{\cos x} \neq -1$$

$$D_f = \mathbb{R} - \left\{k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4}\right\}$$

$$\cos x \neq 0$$

20

⑩

$$\text{الف) } y = \sqrt{2\sin x - 1} \rightarrow 2\sin x - 1 \geq 0 \rightarrow 2\sin x \geq 1 \rightarrow \sin x \geq \frac{1}{2}$$

$$2k\pi + \frac{\pi}{6} \leq x \leq 2k\pi + \frac{5\pi}{6}$$

$$D_f = \left[2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}\right]$$

$$\text{ب) } y = \sqrt{1 - 2\cos x} \rightarrow 1 - 2\cos x \geq 0 \rightarrow 2\cos x \leq 1 \rightarrow \cos x \leq \frac{1}{2}$$

25

$$D_f = \left[2k\pi + \frac{\pi}{3}, 2k\pi + \frac{5\pi}{3}\right]$$