سید سپهر میر عبدالباقی یازدهم B

①

باید هر دو جمله پرانتز صفر باشند
$2(x-1)^2+(y+3)^2+(k-11)=0$

پس k باید 11 باشد

②

$a^2+4a=3a+2 \Rightarrow a^2+a-2=0 \quad (a+2)(a-1)=0 \begin{cases} a=1 \\ a=-2 \end{cases}$
غ ق ق

$\Rightarrow a=1 \rightarrow f(x)= \begin{cases} x^2+4x \,;\, x\geq 1 \\ 2x+3 \,;\, x\leq 1 \end{cases} \quad f(1)=5$

③

$|x+1|\geq 2 \Rightarrow \begin{cases} x+1\geq 2 \Rightarrow x\geq 1 \\ x+1\leq -2 \Rightarrow x\leq -3 \end{cases} \rightarrow f(x)= \begin{cases} 2x^2-b \,;\, x\geq 1 ,\ x\leq -3 \\ 2x+a \,;\, -3< x < 1 \end{cases}$

در (-3) برابر اند
$\Rightarrow 18-b=-6+a \Rightarrow a+b=24$

④

$4x-a\geq 0 \Rightarrow x\geq \frac{a}{4}$
$b-2x\geq 0 \Rightarrow x\leq \frac{b}{2}$ $\longrightarrow \frac{a}{4}=\frac{b}{2} \quad \frac{b}{a}=\frac{1}{2}$

⑤

الف) $\frac{x+1}{|x-3|} \Longrightarrow \frac{x+1}{|x-3|}\geq 0$ $\quad \begin{array}{c|ccc} & -1 & & 3 \\ \hline - & \phi & + & \not\phi\ + \end{array}$

$\frac{4-x}{x^2+2x+4}\geq 0$ $\quad \begin{array}{c|cc} & 4 & \\ \hline + & \phi & - \end{array}$

$\Delta<0$
$a>0$
همیشه +

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

ب) $y=\sqrt{[x]-4}+\sqrt{2-[x]}$ $\quad [x]-4\geq 0 \Rightarrow [x]\geq 4 \quad x\geq 4$
$2-[x]\geq 0 \Rightarrow [x]\leq 2 \Rightarrow x<3$

$D=\emptyset$

(۴)

الف) $\dfrac{x^2-x-6}{x^4-13x^2+36} \geq 0 \Rightarrow \dfrac{(x-3)(x+2)}{(x+2)(x-2)(x+3)(x-3)} \geq 0$

$$\begin{array}{ccccccccc} & -3 & & -2 & & 2 & & 3 & \\ + & \phi & - & \not\exists & - & \not\exists & + & \not\exists & + \end{array}$$

$\Rightarrow D = (-\infty,-3) \cup (-2,2) \cup (3,+\infty)$

ب) $\dfrac{x^3-2x^2-5x+6}{x^3+2x^2-5x-6} \geq 0 \Rightarrow \dfrac{(x-1)(x^2-x-6)}{(x+1)(x^2+x-6)} \geq 0 \Rightarrow$

$\dfrac{(x-1)(x-3)(x+2)}{(x+1)(x+3)(x-2)} \geq 0$

$$\begin{array}{cccccccccccccc} & -3 & & -2 & & -1 & & 1 & & 2 & & 3 & \\ + & \not\exists & - & \phi & + & \not\exists & - & \phi & + & \not\exists & - & \phi & + \end{array}$$

$D = (-\infty,-3) \cup [-2,-1) \cup [1,2) \cup [3,+\infty)$

(۵)

الف) $[-x] - 2 \rightarrow [-x] \geq 2 \Rightarrow x \leq -2$

$D = (-\infty,-2)$

ب) $\dfrac{5x^2+6}{[x]^2-2[x]-3}$ $\quad [x]^2-2[x]-3 \Rightarrow ([x]-3)([x]+1) \neq 0$

$\Rightarrow [x] \neq 3 \Rightarrow x \notin [3,4)$

$\Rightarrow [x] \neq -1 \Rightarrow x \notin [-1,0)$ $\Bigg\} \Rightarrow D = (-\infty,-1) \cup [0,3) \cup [4,+\infty)$

(۶)

الف) $\left.\begin{array}{l} \sin x \neq 0 \\ \cos x \neq 0 \end{array}\right\} \Rightarrow x \neq \left\{ \dfrac{k\pi}{2} \right\}$

$\tan x \neq -1 \Rightarrow x \neq \left\{ k\pi - \dfrac{\pi}{4} \right\}$

$D = \mathbb{R} - \left\{ \dfrac{k\pi}{2}, k\pi - \dfrac{\pi}{4} \right\}$

ب) $y = \sqrt{1-4\sin^2 x} \Rightarrow 1-4\sin^2 x \geq 0$ $\quad \sin^2 x \leq \dfrac{1}{4} \Rightarrow$

$-\dfrac{1}{2} \leq \sin x \leq \dfrac{1}{2}$

$D = \left[k\pi - \dfrac{\pi}{6}, k\pi + \dfrac{\pi}{6} \right]$

$x \geq 1$ (I)

۴

$1-\log_{\frac{1}{2}}^{x-1} \geq 0 \Rightarrow \log_{\frac{1}{2}}^{x-1} \leq 1 \qquad x-1 \geq \frac{1}{2}$

$\cap$ (II) $\Rightarrow D = [\frac{3}{2}, +\infty)$

ب

۱۰

$2^{4x-x^2} \geq 2^3 \qquad 4x-x^2 \geq 3 \qquad x^2-4x+3 \leq 0$

$(x-3)(x-1)$

$D = [1,3]$

ب) $\frac{3x+5}{2x+4} \in W$

$x \in \frac{-4w+5}{2w-3}$

$D = \{x \mid x \in \frac{-4k+5}{2k-3}, k \in W\}$

۹ ب) $x(x-1) \geq 0 \qquad (-\infty,0] \cup [1,+\infty)$ (III)

$x^2-3x \geq 0 \qquad \log_4^{x^2-3x} \neq 1 \qquad x^2-3x-4 \neq 0 \qquad (x+1)(x-4) \neq 0$

(I) $\qquad x \neq -1, 4$

$(-\infty,0) \cup (3,+\infty)$ $\qquad$ (II)

$D = (-\infty,-1) \cup (-1,0] \cup [3,4) \cup (4,+\infty)$