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نام و نام خانوادگی: الهام عباسی   پاسخنامه تشریحی تکلیف شماره ۲ کلاس 11 A

۱	$2(x-1)^2 + (y+3)^2 = 0$ $2x^2 - 4x + 2 + y^2 + 6y + 9 = 0 \rightarrow k = 9 + 2 = 11$ جواب ۴
۲	$x^2 + 4x \xrightarrow{x=a} a^2 + 4a$; $2x + a + 2 \xrightarrow{x=a} 2a + a + 2$ $\rightarrow a^2 + 4a = 3a + 2 \rightarrow a^2 + a - 2 = 0$ $\Delta = 1 - 4(-2) = 9 \rightarrow a = \frac{-1 \pm 3}{2}$ $\rightarrow a = 1, -2 \ (a>0) \Rightarrow a = 1$ $f(x) = \begin{cases} x^2 + 4x \ ; \ x \geq 1 \\ 2x + 3 \ ; \ x < 1 \end{cases} \rightarrow f(1) = 2(1) + 3 = 5$ جواب ۱
۳	$\lvert x+1 \rvert \geq 2 \rightarrow x + 1 \geq 2 \Rightarrow x \geq 1$ $\rightarrow x + 1 \leq -2 \Rightarrow x \leq -3$ $x^2 + 4x \xrightarrow{x=-3} 2(9) - b = 18 - b$; $a + 2x \xrightarrow{x=-3} a - 6$ $\rightarrow 18 - b = a - 6 \rightarrow a + b = 24$ جواب ۲
۴	$\rightarrow \sqrt{6x - a} + \sqrt{b - 3x} = 6$ $6x - a \geq 0 \rightarrow 6x \geq a \rightarrow x \geq \frac{a}{6} \xrightarrow{x=2} 2 \geq \frac{a}{6}$ $b - 3x \geq 0 \rightarrow 3x \leq b \rightarrow x \leq \frac{b}{3} \xrightarrow{x=2} 2 \leq \frac{b}{3}$ $\rightarrow \frac{a}{6} = \frac{b}{3} = 2 \rightarrow b = 6, a = 12 \Rightarrow \frac{b}{a} = \frac{6}{12} = \frac{1}{2}$ ۳
۵	الف) $\sqrt{\frac{x+1}{\lvert x-3 \rvert}}$; $-1, 3$; $\rightarrow (3, +\infty) \cup [-1, 3)$ ① ; $\sqrt{\frac{6-x}{x^2+2x+3}}$ ($6-x$: $+$ / $-$; x^2+2x+3: همواره $+$; کل: $+$ / $-$) $\rightarrow (-\infty, 6]$ ② ۴ $① \cap ② \Rightarrow D = [-1, 6] - \{3\}$ ب) $[x] - 4 \geq 0 \rightarrow [x] \geq 4 \rightarrow x \geq 4$ ① $2 - [x] \geq 0 \quad [x] \leq 2 \rightarrow x < 3$ ② $① \cap ② = \emptyset$

۶ الف)

$\sqrt{\frac{x^2-x-4}{x^4-12x^2+32}} \to \Delta = 25 \to x = \frac{1 \pm 5}{2} \to x^2 = 3, -2$

$x^2 = t \to t^2 - 12t + 32 \to \Delta = 25 \to t = \frac{12 \pm 5}{2} \to 8, 4 \to x = \pm 2\sqrt{2}, \pm 2$

$D = (-\infty, -2\sqrt{2}) \cup (-2\sqrt{2}, -2) \cup (2, 2\sqrt{2}) \cup (2\sqrt{2}, +\infty)$

ب)

$x^3 - 2x^2 - 5x + 4 \div (x-1) = (x-4)(x+1) \to x = 4, -1, 1$

$x^3 + 2x^2 - ax - 4 \div (x+1) = (x+2)(x-2) \to x = -2, -1, 2$

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

۷ الف)

$[-x] - 2 \geq 0 \to [-x] \geq 2 \to -x \geq 2 \to x \leq -2 \to D = (-\infty, -2]$

ب)

$[x]^2 - 2[x] - 3 \neq 0 \to \Delta = 4 - 4(-3) = 16 \to [x] = \frac{2 \pm 4}{2} \to 3, -1$

$[x] \neq 0 \to x \notin [0, 1)$

$[x] \neq -1 \to x \notin [-1, 0)$

$D = R - \{[0, 1) \cup [-1, 0)\}$

۸ الف)

$\frac{\frac{\cos x}{\sin x} + 1}{\tan x + 1}$ $\sin x \neq 0 \to x \notin k\pi$ ①

$\tan x + 1 \neq 0 \to \tan x \neq -1 \to x \notin \{2k\pi + \frac{3\pi}{4}, 2k\pi + \frac{7\pi}{4}\}$ ②

$D = ① \cup ② \to R - \{k\pi, 2k\pi + \frac{3\pi}{4}, 2k\pi + \frac{7\pi}{4}\}$ $R - \{\frac{k\pi}{2}, k\pi - \frac{\pi}{4}\}$

$\cos x \neq 0$

ب)

$1 - 4\sin^2 x \geq 0 \quad 4\sin^2 x \leq 1 \quad \sin^2 x \leq \frac{1}{4} \to -\frac{1}{2} \leq \sin x \leq \frac{1}{2} \to x \in [k\pi, k\pi + \frac{\pi}{6}]$

$\sin x \geq -\frac{1}{2}$

$\to D = \{\frac{k\pi}{2} + \frac{\pi}{4}, k\pi\}$ $D = [k\pi - \frac{\pi}{6}, k\pi + \frac{\pi}{6}]$

۹ الف)

$1 - \log_{\frac{1}{2}}^{x-1} \geq 0 \to \log_{\frac{1}{2}}^{x-1} \leq 1 \to x - 1 \geq \frac{1}{2} \to x \geq \frac{3}{2} \to D = (-\infty, \frac{3}{2}]$

$D = [\frac{3}{2}, +\infty)$

ب)

$x^2 - x \geq 0 \to x \in (-\infty, 0] \cup [1, +\infty)$ ②

$1 - \log_4^{x^2 - 3x} \neq 0 \quad \log_4^{x^2-3x} \neq 1 \quad x^2 - 3x \neq 4 \to x^2 - 3x - 4 \neq 0 \to \Delta = 25$

$x = \frac{3 \pm 5}{2} \to 4, -1$ $R - \{-1, 4\}$ ①

$① \cap ② = (-\infty, 0) \cup [1, +\infty) - \{-1, 4\}$

۱۰ الف)

$3^{4x - x^2} - 1 \geq 0 \quad 3^{4x - x^2} \geq 1 \to 4x - x^2 \geq 0 \to -x^2 + 4x \geq 0 \to x \in [0, 4]$

$D = [1, 4]$

ب)

$\frac{3x + 5}{4x + 3} \in w \to 4xw + 3w = 3x + 5 \to 3x - 4xw = 3w - 5 \to x(3 - 4w) = 3w - 5$

$\to x = \frac{3w - 5}{3 - 4w} \to \{x \mid x \in \frac{3k - 5}{3 - 4k}, k \in w\}$