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نام و نام خانوادگی فرزند پاسخنامه تشریحی تکلیف شماره ۲ کلاس یازدهم B

$$2x^2 + y^2 - 4x + 8y + k = 0$$

$$\Rightarrow (\sqrt{2}x - \sqrt{2})^2 + (y + 4)^2 = 0$$

$$\Rightarrow 2x^2 + 2 - 4x + y^2 + 8y + k = 0$$

$$\Rightarrow k = 9 + 2 \Rightarrow \boxed{k = 11} \checkmark$$

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$$f(x) = \begin{cases} x^2 + 2x & ; x \geq a \\ x^2 + a + 2 & ; x \leq a \end{cases} \xrightarrow{x=a} a^2 + 2a = 2a + a + 2$$

$$\Rightarrow a^2 + a - 2 \geq 0 \xrightarrow[\text{فرایب}]{\text{جمع}} a \leq -2 \text{ غنی}$$

$$\Rightarrow f(1) = (1 \times 1) + 1 + 2 = 4 \checkmark$$

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$$f(x) = \begin{cases} 2x^2 - b & ; |x+1| \geq 2 \\ a + 2x & ; -2 \leq x \leq -1 \end{cases} \xrightarrow{x=-2} 2x^2 - b \geq a + 2x$$

$$\Rightarrow 12 - b - a \geq -6 \Rightarrow \boxed{a + b \leq 18} \checkmark$$

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$$y \geq \sqrt{9x - a} + \sqrt{b - 3x} \xrightarrow{x=2} \sqrt{12 - a} + \sqrt{b - 6}$$

$$\Rightarrow a \leq 12, b \leq 6 \Rightarrow \frac{b}{a} \leq \frac{6}{12} = \boxed{\frac{1}{2}} \checkmark$$

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الف) $y \geq \sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{9-x}{x^2+2x+4}} \Rightarrow \left. \begin{aligned} x+1 &\geq 0 \Rightarrow x \geq -1 \\ x-3 &\leq 0 \Rightarrow x \leq 3 \\ 9-x &\geq 0 \Rightarrow x \leq 9 \\ x^2+2x+4 &\geq 0 \Rightarrow \text{دائماً مثبت} \end{aligned} \right\} \Rightarrow \text{همیشه}$

$\Rightarrow [-1, 3] - \{3\} \checkmark$

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ب) $y \geq \sqrt{[x]-4} + \sqrt{2-[x]} \Rightarrow \begin{cases} -1 \leq x \leq 4 \\ 2 \leq x \leq 3 \end{cases} \Rightarrow \text{تقاطع تهی} \checkmark$

اشتراک ندارد

الف) $\sqrt{x^2 - x - 6} \geq x^2 - x - 6 \Rightarrow (x-3)(x+2) \Rightarrow x \geq 3, -2$
 $\Rightarrow A = 9, f \Rightarrow x \geq \pm 2, \pm 3$
 $\Rightarrow D_F = (-\infty, -3) \cup (2, 3) \cup (3, +\infty)$

ب) $\sqrt{x^2 - 2x^2 - 5x + 6} \Rightarrow x^2 - 2x^2 - 5x + 6 = 0 \Rightarrow -x^2 - 5x + 6 = 0 \Rightarrow x^2 + 5x - 6 = 0 \Rightarrow (x+6)(x-1) = 0 \Rightarrow x = -6, 1$
 $\Rightarrow D_F = (-\infty, -6) \cup (1, +\infty)$

الف) $y \geq \sqrt{-x} - 2 \Rightarrow x \leq -4$

ب) $y \geq \frac{\Delta x^2 + 6}{[x]^2 - 2[x] - 3} \Rightarrow x^2 - 2x - 3 = (x-3)(x+1) \Rightarrow x \geq 3, -1$
 $\Rightarrow D_F = \mathbb{R} - [-1, 0) \cup (3, 4]$

$y \geq \frac{\cot x + 1}{\tan x + 1} \Rightarrow \frac{\cos x + 1}{\sin x + 1} \Rightarrow \sin x \neq 0, \cos x \neq 0 \Rightarrow x \in \left\{ \frac{k\pi}{2}, k\pi - \frac{\pi}{2} \right\}$
 $\tan x + 1 \neq 0 \Rightarrow \tan x \neq -1$

$y \geq \sqrt{1 - f \sin^2 x} \Rightarrow f \sin^2 x \leq 1 \Rightarrow \sin^2 x \leq \frac{1}{f} \Rightarrow -\frac{1}{\sqrt{f}} \leq \sin x \leq \frac{1}{\sqrt{f}} \Rightarrow D_F = \left[k\pi - \frac{\pi}{2}, k\pi + \frac{\pi}{2} \right]$

الف) $y \geq \sqrt{1 - \log_{\frac{1}{f}} x - 1} \Rightarrow x - 1 > 0 \Rightarrow x > 1$
 $1 - \log_{\frac{1}{f}} x - 1 \geq 0 \Rightarrow \log_{\frac{1}{f}} x \leq 1 \Rightarrow x \leq \frac{f}{f-1}$
 $\Rightarrow D_F = \left[\frac{f}{f-1}, +\infty \right)$

ب) $\sqrt{x^2 - x} \Rightarrow x^2 - x \geq 0 \Rightarrow x(x-1) \geq 0 \Rightarrow x \geq 0, 1$
 $1 - \log_{\frac{1}{f}} x \geq 0 \Rightarrow \log_{\frac{1}{f}} x \leq 1 \Rightarrow x \leq \frac{f}{f-1}$
 $\Rightarrow D_F = (-\infty, -1) \cup (-1, 0) \cup (1, \frac{f}{f-1}) \cup (\frac{f}{f-1}, +\infty)$

الف) $y \geq \sqrt{x^2 - x^2 - 1} \Rightarrow x^2 - x^2 \geq 1 \Rightarrow -1 \geq 1 \Rightarrow x \geq 1, 3$
 $\Rightarrow D_F = [1, 3]$

ب) $\left(\frac{x^2 + 5}{x^2 + 1} \right) \in W \Rightarrow \frac{x^2 + 5}{x^2 + 1} = \frac{p}{q} \Rightarrow x^2 + 5 = \frac{p}{q}(x^2 + 1) \Rightarrow x^2 + 5 = \frac{px^2 + p}{q} \Rightarrow qx^2 + 5q = px^2 + p \Rightarrow (q-p)x^2 = p - 5q$
 $\Rightarrow D_F = \left\{ x \mid x^2 = \frac{p - 5q}{q - p}, k \in W \right\}$

الف) $y \geq \sqrt{x^2 - x^2 - 1} \Rightarrow x^2 - x^2 \geq 1 \Rightarrow -1 \geq 1 \Rightarrow x \geq 1, 3$
 $\Rightarrow D_F = (-\infty, -3) \cup [-2, -1) \cup [1, 2) \cup [3, +\infty)$