* کیان جعفری *

تکلیف شماره‌ی ۲

① $2x^2 - 4x + 2 + y^2 + 6y + 9 = 0 \Rightarrow 9 + 2 = k = (11)$

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② $a^2 + 4a = 3a + 2 \Rightarrow a^2 + a - 2 = 0 \Rightarrow (a-1)(a+2)$

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$\Rightarrow 1 + 4 = (5)$

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③ $\Rightarrow 12 - a = 0 \Rightarrow a = 12 \,,\; b - 6 = 0 \Rightarrow b = 6 \Rightarrow \frac{b}{a} = \frac{6}{12} = \frac{1}{2}$

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④ $\Rightarrow |x+1| \geq 2 \Rightarrow$

$x + 1 \geq 2 \Rightarrow x \geq 1$

$x + 1 \leq -2 \Rightarrow x \leq -3$

$\Rightarrow 18 - b = a - 6 \Rightarrow a + b = 18 + 6 = (24)$

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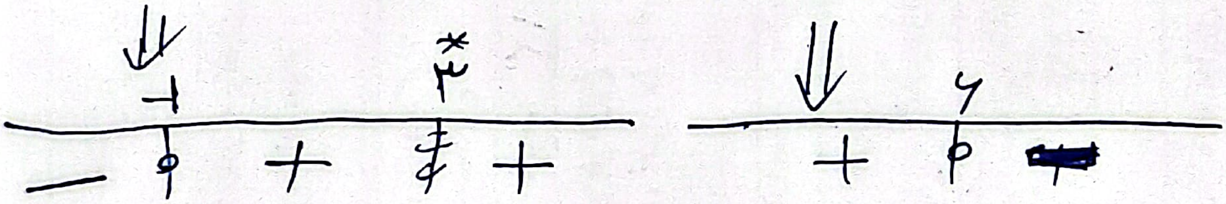
⑤

الف) $\sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{6-x}{x^2+2x+4}} \Rightarrow$



$\Rightarrow D_f = [-1 , 6] - \{3\}$

ب) $\sqrt{[x] - 4} + \sqrt{2 - [x]} \Rightarrow$

$[x] \geq 4 \Rightarrow x \geq 4 \,,\; 2 \geq [x] \Rightarrow x < 3 \Rightarrow D_f = \varnothing$

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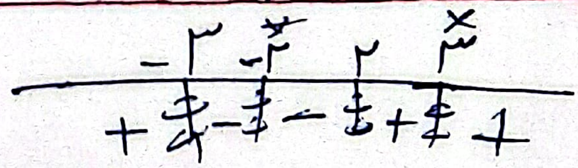
⑥

الف) $\sqrt{\frac{(x-3)(x+2)}{(x-2)(x+2)(x-3)(x+3)}} \Rightarrow$



$\Rightarrow D_f = (-\infty , -3) \cup (2 , +\infty) - \{3\}$

ب) $\sqrt{\frac{x^3-2x^2-5x+6}{x^3+2x^2-5x-6}} = \sqrt{\frac{(x+2)(x-1)(x-3)}{(x-2)(x+1)(x+3)}}$

-3	-2	-1	1	2	3
+ ∄	− ∅	+ ∄	− ∅	+ ∄	− ∅ +

$\Rightarrow D_f = (-\infty,-3) \cup [-2,-1] \cup [1,2) \cup [3,+\infty)$

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(٧)

الف) $\sqrt{[-x]-2}$ $\Rightarrow [-x] \geq 2 \Rightarrow -x \geq 2 \Rightarrow x \leq -2$

$\Rightarrow D_f = (-\infty,-2]$

ب) $[x]^2 - 2[x] - 3 \neq 0$ $x^2-2x-3=0 \Rightarrow x=-1,3$

$\Rightarrow D_f = \mathbb{R} - \left([2,4) \cup (0,-1]\right)$

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(٨)

الف) $\sin x \neq 0 \Rightarrow x \neq k\pi$, $\cos x \neq 0 \Rightarrow x \neq k\pi + \frac{\pi}{2}$

$\Rightarrow D_f = \mathbb{R} - \{k\pi, k\pi - \frac{\pi}{2}\}$

ب) $\sqrt{1-2\sin^2 x} \Rightarrow 2\sin^2 x \leq 1 \Rightarrow \sin^2 x \leq \frac{1}{2} \Rightarrow -\frac{1}{2} \leq \sin x \leq \frac{1}{2}$

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

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٩)

الف) $\sqrt{1-\log_{\frac{1}{2}}^{x-1}} \Rightarrow \log_{\frac{1}{2}}^{x-1} \leq 1 \Rightarrow x-1 \leq \frac{1}{2} \Rightarrow x \leq \frac{3}{2}$

$D_f = (-\infty, \frac{3}{2}]$

ب) $x^2 - x \geq 0 \Rightarrow$ ① $+ \; 0 \; - \; 1 \; +$

$\log_2^{x^2-2x} \neq 1 \Rightarrow x^2-2x-2 \neq 0 \Rightarrow x \neq -1, 2$ ②

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

(۵)

الف) $۲^{۴x-x^۲} \geq ۲^{۳} \Rightarrow ۴x-x^۲ \geq ۳ \Rightarrow x^۲-۴x+۳ \leq ۰$

$\Rightarrow D_f = [۱, ۳]$

ب) $\frac{۳x+۵}{۲x+۴} \in \mathbb{W} \Rightarrow \frac{۴w-۵}{-۲w+۳} \in \mathbb{N}$ [illegible]

$D_f = \{x \mid x = \frac{۴k-۵}{-۲k+۳}, k \in \mathbb{Z}\}$