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الف) $\frac{x+2}{x^2-11x+12} = \frac{x+2}{(x-1)(x^2-12x+12)}$ $\Delta = 144 - 48 = 96$
 $\frac{12 \pm \sqrt{96}}{2} = \frac{12 \pm 4\sqrt{6}}{2} = 6 \pm 2\sqrt{6}$
 $Df = \mathbb{R} - \left\{ \frac{6-2\sqrt{6}}{1}, \frac{6+2\sqrt{6}}{1}, 1 \right\}$

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ب) $\frac{x+3}{x^2-x-12} = \frac{x+3}{(x+1)(x^2-12x-12)}$ $\Delta = 144 + 48 = 192$
 $\frac{12 \pm \sqrt{192}}{2} = \frac{12 \pm 8\sqrt{3}}{2} = 6 \pm 4\sqrt{3}$
 $Df = \mathbb{R} - \left\{ -1, -\frac{6}{4\sqrt{3}}, 2 \right\}$

الف) $x - \sqrt{3x-2} \neq 0 \rightarrow x^2 \neq 3-2x \rightarrow x^2+2x-3 \neq 0$
 $Df = \mathbb{R} - \{1, -3\}$ جواب نداشت

۵

ب) $x - \sqrt{3x-2} \neq 0 \rightarrow x^2 \neq 3x-2 \rightarrow Df = \mathbb{R} - \{1, 2\}$

الف) $y = \frac{\sin x}{2\cos x - 1} = 2\cos x - 1 \neq 0 \rightarrow \cos x \neq \frac{1}{2} \rightarrow Df = \mathbb{R} - \left\{ 2k\pi - \frac{\pi}{3}, 2k\pi + \frac{\pi}{3} \right\}$

ب) $y = \frac{\cos x + 1}{2\sin x + 1} = 2\sin x + 1 \neq 0 \rightarrow \sin x \neq -\frac{1}{2} \rightarrow Df = \mathbb{R} - \left\{ 2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6} \right\}$

۱۱۵۵

ج) $y = \frac{\tan x + 2}{\cot x - 1} = \cot x - 1 \neq 0 \rightarrow \cot x \neq 1 \rightarrow x = k\pi + \frac{\pi}{4}$

$\sin x \neq 0 \rightarrow x = 2k\pi, 2k\pi + \pi \rightarrow Df = \mathbb{R} - \left\{ 2k\pi, 2k\pi + \frac{\pi}{2}, 2k\pi + \frac{3\pi}{2} \right\}$

د) $y = \frac{\sin x + 1}{\sin^2 x - 2} = \sin^2 x \neq 2 \rightarrow \sin x \neq \pm \frac{\sqrt{2}}{2} \rightarrow Df = \mathbb{R} - \left\{ 2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4}, 2k\pi + \frac{5\pi}{4}, 2k\pi + \frac{7\pi}{4} \right\}$

الف) $\frac{2}{x+1} - \frac{3}{x-1} \neq 0 \rightarrow Df = (-\infty, -1) \cup (1, +\infty)$

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ب) $\frac{1}{x+1} - \frac{2}{x-1} \neq 0 \rightarrow Df = (1, 2)$

ج) $\frac{-1}{x+1} - \frac{-2}{x-1} \neq 0 \rightarrow Df = (-\infty, -2] \cup [-1, +\infty)$

د) $x^2 - \sqrt{x} + 4 = 0$
 $(x-4)(x-1)$
 $\hookrightarrow 1, 4$

$\frac{1}{x+1} - \frac{2}{x-1}$
 $[1, 4]$

د) الف) $\frac{x^2 - 2x + 2}{x - 2} = \frac{(x-2)(x-1)}{x-2} \rightarrow 1, 2$ $Df = (-\infty, 1] \cup [2, \infty)$

ب) $x^2 - 4x + 5 = (x-2)(x-1) \rightarrow 1, 2$ $Df = (-\infty, -1] \cup [2, +\infty)$

هـ) الف) $\frac{x^2 - 2x + 3}{x^2 - 1} > 0$ $\frac{x^2 - 2x + 3}{x^2 - 1} \rightarrow 1, 3$ $Df = (-\infty, -1) \cup [3, +\infty)$

ب) $x^2 - 1 = \frac{-1}{+ \frac{1}{2} - \frac{1}{2} +}$ $Df = (-\infty, -1) \cup (1, +\infty)$ $D = \mathbb{R} - \{ \pm 1 \}$

$x^2 - 1 \neq 0 \rightarrow x^2 \neq 1 \rightarrow x \neq \pm 1$

و) الف) $x^2 - 2x > 0$ $x(x-2) > 0$ $Df = (-\infty, 0) \cup (2, +\infty)$

ب) $\log 14 - x^2 \rightarrow 14 - x^2 > 0$ $x^2 < 14 \rightarrow x \in (-\sqrt{14}, \sqrt{14})$

ج) $|x| - 2 \rightarrow |x| > 2$ $|x| > 2 \rightarrow \begin{cases} x > 2 \\ x < -2 \end{cases} \rightarrow (-\infty, -2) \cup (2, +\infty)$

د) $|x| - 2 \neq 1$ $|x| \neq 3$ $x \neq 3, -3$

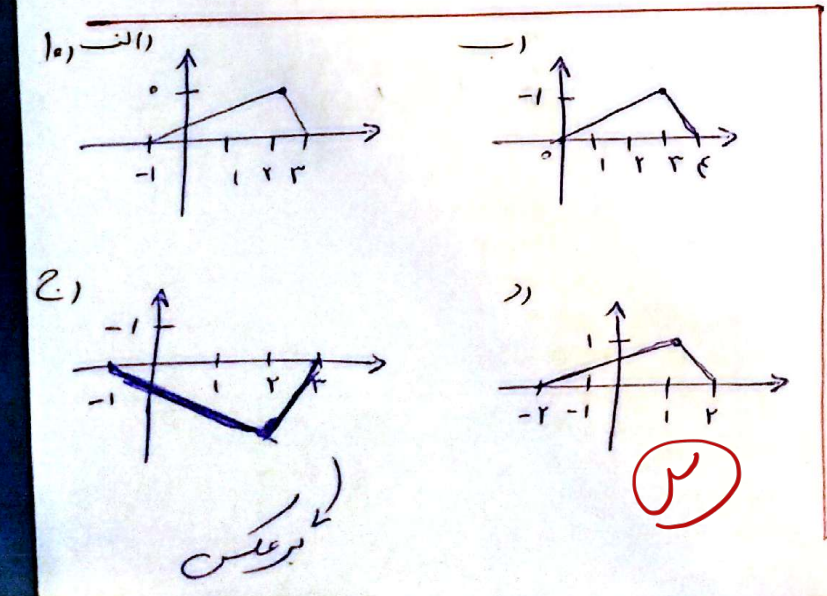
١, ٥, ٦ $\rightarrow Df = (-\infty, -2) \cup (2, +\infty)$

ج) $x^2 - \sqrt{x} + 12 = \frac{(x-3)(x-4)}{x-3} \rightarrow \log \frac{x-4}{1-x} \rightarrow x > 4$ $Df = (4, 10)$

د) $\log 4 - x \rightarrow 4 - x > 0$ $x < 4$ $x^2 - 11x + 18 = (x-2)(x-9) \rightarrow 2, 9$

$Df = (0, 4] - \{1\}$

١) $y = \frac{x^2 - x}{x^2 + x} \rightarrow x^2 + x = x(x+1)$ $Df = (-\infty, -1) \cup (0, +\infty)$



	$x < -1$	$-1 < x < 0$	$0 < x < 1$	$x > 1$
x	-	+	+	+
$x-1$	-	-	-	+
$P(x)$	+	-	+	+

١) $\frac{1}{x} \cdot \frac{x}{x} = y$ $a = \frac{1}{x}$

$(0, 4] - \{1\}$ $b = 0$

$c = -\frac{x}{y}$