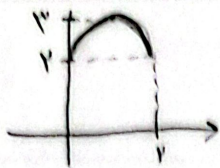
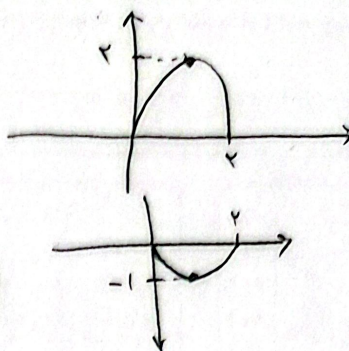


الف)

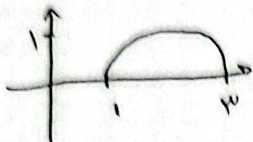


ب)

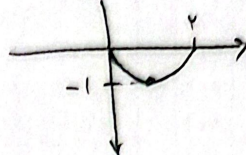


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ج)



د)



الف) $(x-2)(x-3) < 0 \rightarrow 2, 3$ $\frac{x}{+} \frac{2}{-} \frac{3}{+}$ $(-\infty, 2) \cup (3, +\infty)$

ب) $(x-5)(x-1) < 0 \rightarrow 1, 5$ $\frac{x}{+} \frac{1}{-} \frac{5}{+}$ $(1, 5)$

ج) $(x+2)(x+3) \geq 0 \rightarrow -3, -2$ $\frac{x}{+} \frac{-3}{-} \frac{-2}{+}$ $(-\infty, -3] \cup [-2, +\infty)$

د) $(x-6)(x-1) \leq 0 \rightarrow 1, 6$ $\frac{x}{+} \frac{1}{-} \frac{6}{+}$ $[1, 6]$

الف) $\frac{(x-1)(x-2)}{x-5} < 0 \rightarrow 1, 2, 5$ $\frac{x}{+} \frac{1}{-} \frac{2}{+} \frac{5}{-}$

$(-\infty, 1) \cup (2, 5)$

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ب) $\frac{(x-1)(x+1)}{(x-5)(x-1)} \geq 0 \rightarrow 1, -1, 5$ $\frac{x}{+} \frac{1}{-} \frac{-1}{+} \frac{5}{-}$ $(-\infty, -1] \cup (5, +\infty)$

الف) $\frac{(x-1)(x^2+x+1)}{x(x-1)(x+1)} \geq 0 \rightarrow 0, -1$ $\frac{x}{+} \frac{0}{-} \frac{-1}{+}$ $(1, +\infty) \cup (-\infty, -1) \cup (0, 1)$

ب) $\frac{(x-4)(x+4)}{(x-4)(x-1)} \geq 0 \rightarrow -4, 1$ $\frac{x}{+} \frac{-4}{-} \frac{1}{+}$ $(-\infty, -4] \cup (1, +\infty)$

الف) $2-x \geq 0 \rightarrow 2 \geq x$

$4-\sqrt{2x} \geq 0 \rightarrow 4 \geq \sqrt{2x} \rightarrow 16 \geq 2x \rightarrow 16 \geq x \rightarrow x \geq -16$

$2 \geq x \geq -16$

ب) $x-2 \geq 0 \rightarrow x \geq 2$

$11 \geq x \geq 2$

$3-\sqrt{x-2} \geq 0 \rightarrow 3 \geq \sqrt{x-2} \rightarrow 9 \geq x-2 \rightarrow 11 \geq x$

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ا) $\sqrt{x^2} \geq 0 \rightarrow x \geq \sqrt{x^2} \rightarrow x \geq x^2 < \sqrt{x^2}$
 $\frac{-\sqrt{x^2}}{-1} + \frac{\sqrt{x^2}}{-1} \rightarrow \text{DF} = [-\sqrt{x^2}, \sqrt{x^2}]$

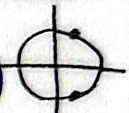
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ب) $3|x| - 9 \geq 0 \rightarrow 3|x| \geq 9$
 $|x| \geq 3 \rightarrow \text{DF} = \{x \leq -3\} \cup \{x \geq 3\}$ (مقسمة)

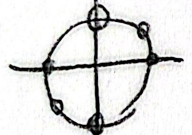
ا) $\frac{|x+1|}{|x-3|} \rightarrow |x-3| \neq 0 \quad |x| \neq 3 < \begin{matrix} x=3 \\ x=-3 \end{matrix}$
 $\text{DF} = \mathbb{R} - \{3, -3\}$

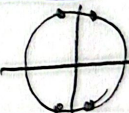
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ب) $\frac{5x+1}{\sqrt{x-2}} \rightarrow \sqrt{x-2} \neq 0$
 $\sqrt{x} \neq 2 \rightarrow x \neq 4$
 $\text{DF} = \mathbb{R} - \{4\}$

ا) $\sqrt{\cos x - 1} \neq 0 \quad \sqrt{\cos x} \neq 1 \quad \cos x \neq \frac{1}{\sqrt{2}}$
 $\text{DF} = \mathbb{R} - \{x \mid x = \pm \frac{\pi}{4}\}$ 

ب) $\sqrt{\sin x + 1} \neq 0 \quad \sqrt{\sin x} \neq -1 \quad \sin x \neq -\frac{1}{\sqrt{2}}$
 $\text{DF} = \mathbb{R} - \{x \mid x = \frac{5\pi}{4} + 2k\pi, \frac{3\pi}{4} + 2k\pi\}$ 

ج) $\cot x \neq 1 \neq 0$  $\sin x \neq 0$
 $\cos x \neq 0$
 $\text{DF} = \mathbb{R} - \{k\pi, k\pi + \frac{\pi}{2}, k\pi + \frac{3\pi}{2}\}$

د) $\sqrt{\sin^2 x - \frac{1}{2}} \neq 0 \quad \sin^2 x \neq \frac{1}{2} \rightarrow \sin x \neq \pm \frac{\sqrt{2}}{2}$
 $\text{DF} = \mathbb{R} - \{x \mid x = \pm \frac{\pi}{4}\}$ 

$\sqrt{|x-2| - \frac{1}{x}} > 0$

$|x-2| > \frac{1}{x}$

$|x-2| > \frac{1}{x} \begin{cases} x-2 > \frac{1}{x} \rightarrow x > \frac{9}{x} \\ -\frac{1}{x} > x-2 \rightarrow \frac{1}{x} > x \end{cases} \rightarrow \text{DF} = (\frac{9}{x}, +\infty) \cup (-\infty, \frac{1}{x})$

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ا) $x - 2|x| \geq 0$
 $\frac{x}{x} \geq \frac{2|x|}{x} \begin{cases} x \geq x \\ x \geq -x \end{cases} \rightarrow \text{DF} = \{x \geq -2\}$

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ب) $\sqrt{\frac{|x|}{|x|}} \quad |x| \neq 0$
 $\text{DF} = \mathbb{R} - \{0\}$