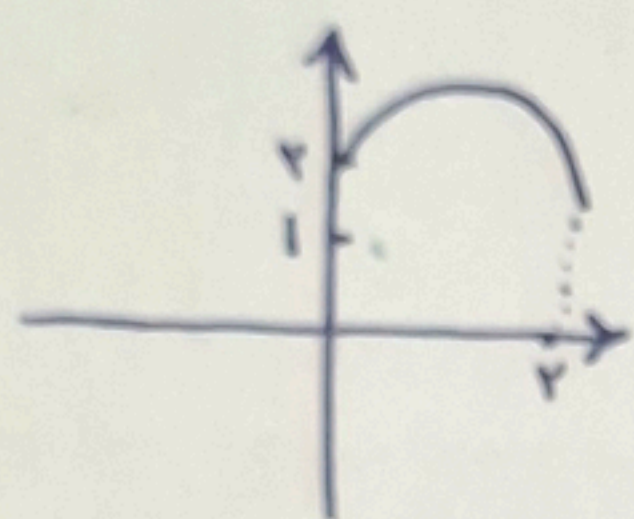
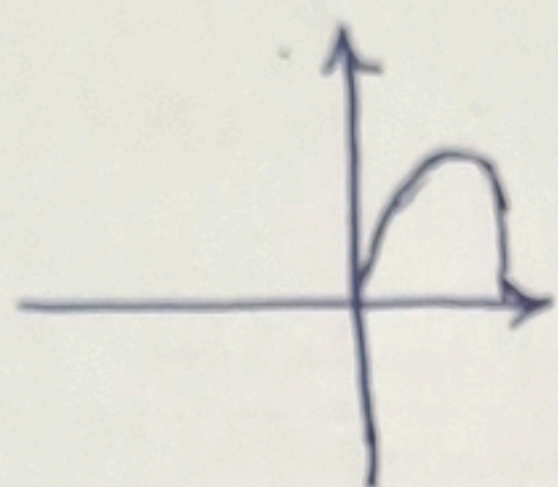


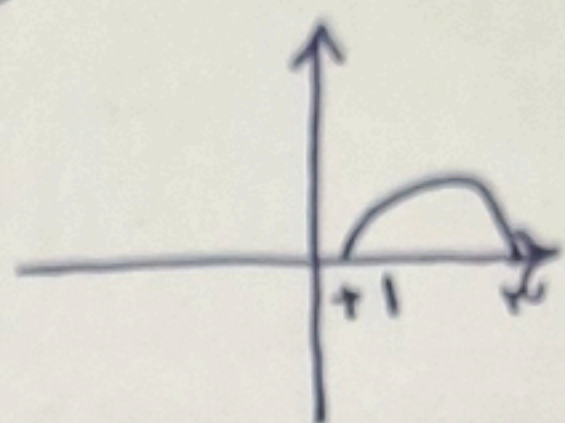
الف



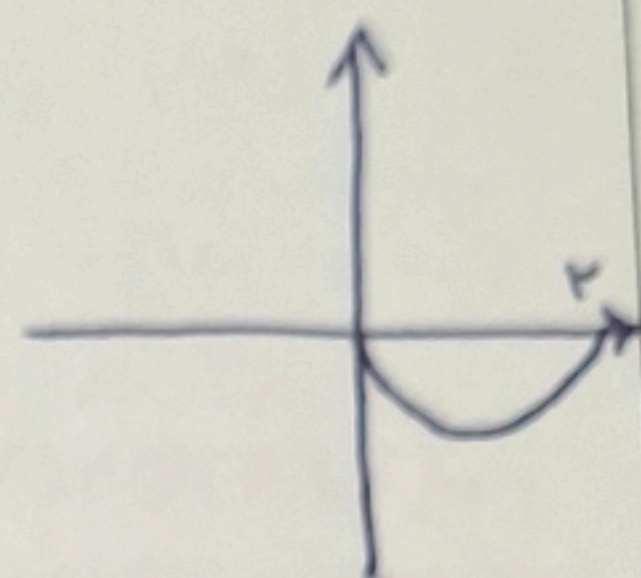
ب



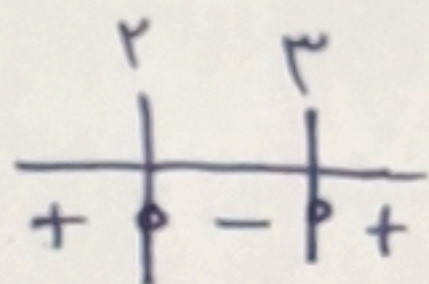
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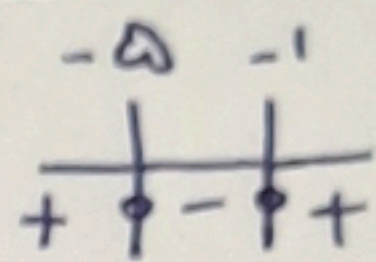


الف $(x-2)(x-3) > 0$



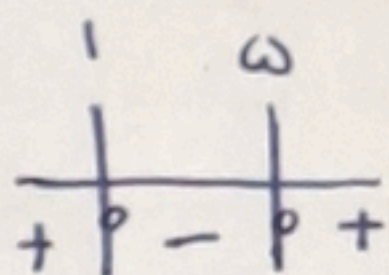
$D_f: (-\infty, 2) \cup (3, +\infty)$

ج $(x+1)(x+5) \geq 0$



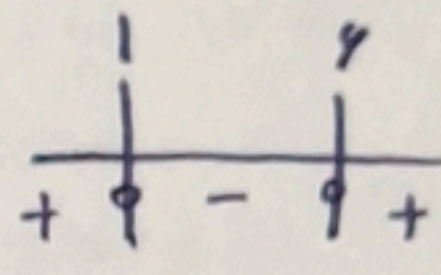
$D_f: (-\infty, -5] \cup [-1, +\infty)$

ب $(x-1)(x-5) < 0$



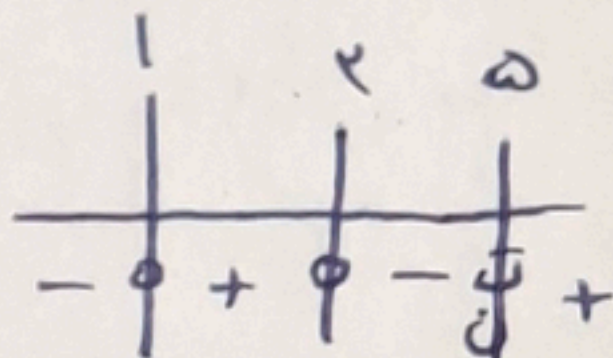
$D_f: (1, 5)$

د $(x-1)(x-2) \leq 0$



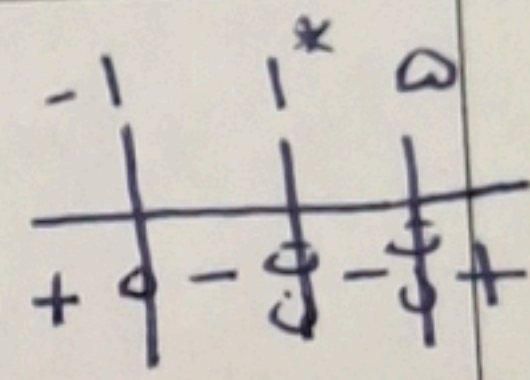
$D_f: [1, 2]$

الف $\frac{(x-1)(x-2)}{(x-5)} < 0$



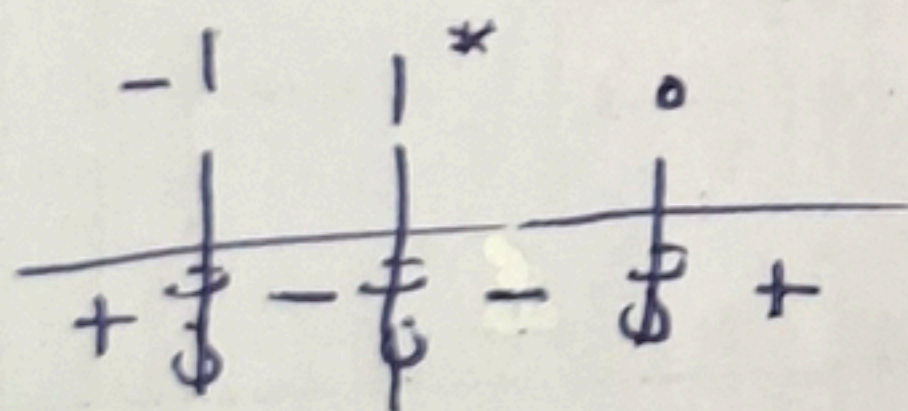
$D_f: (-\infty, 1) \cup (2, 5)$

ب $\frac{(x-1)(x+1)}{(x-1)(x-5)} \geq 0$



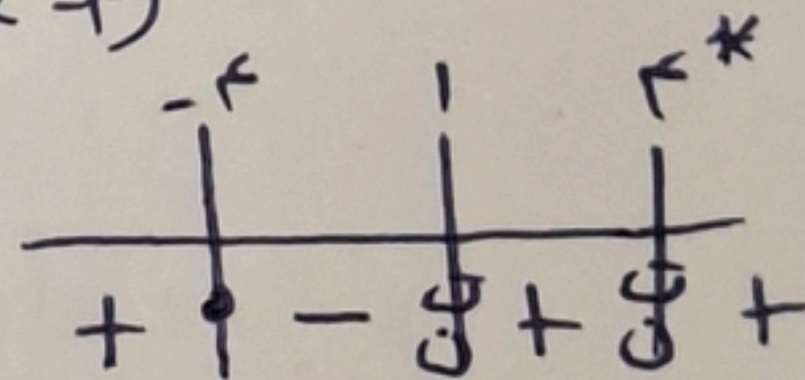
$D_f: (-\infty, -1] \cup (5, +\infty)$

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



$D_f: (-\infty, -1) \cup (0, +\infty)$

ب $\frac{(x-1)(x+4)}{(x-1)(x-4)} \geq 0$



$D_f: (-\infty, -4] \cup (1, 4) \cup (4, +\infty)$

الف $x \leq 0 = (-\infty, 0]$

ب $2 \leq x \leq \sqrt{3}+2$

$\begin{cases} x \leq 2 \\ 4 - \sqrt{2-x} \geq 0 \end{cases}$

$\Rightarrow \sqrt{2-x} \leq 4$

$\Rightarrow 2-x \leq 16 \Rightarrow x \geq -14$

$\begin{cases} x \geq 2 \\ 3 - \sqrt{x-2} \geq 0 \end{cases}$

$\Rightarrow \sqrt{x-2} \leq 3$

$\Rightarrow x-2 \leq 9 \Rightarrow x \leq 11$

الف $+2x^2 \leq +4$

$$x^2 \leq 2 \Rightarrow -\sqrt{2} \leq x \leq \sqrt{2}$$

ب) $3|x| \geq 9$

$$|x| \geq 3$$

$$x \geq 3 \quad \vee \quad -3 \geq x$$

$$\Rightarrow D_f: (-\infty, -3] \cup [3, +\infty)$$

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الف $|x| - 3 \neq 0$

$$D_f: \mathbb{R} - \{\pm 3\}$$

$$|x| \neq 3 \Rightarrow x \neq \pm 3$$

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ب) $\sqrt{x} - 3 \neq 0$

$$\sqrt{x} \neq 3$$

$$, x \geq 0$$

$$x \neq 9$$

$$D_f: [0, +\infty) - \{9\}$$

الف $2 \cos x \neq 1 \Rightarrow \cos x \neq \frac{1}{2} \Rightarrow D_f: \mathbb{R} - \left\{ 2k\pi \pm \frac{\pi}{3} \right\}$

ب) $2 \sin x \neq -1 \Rightarrow \sin x \neq -\frac{1}{2} \Rightarrow D_f: \mathbb{R} - \left\{ 2k\pi - \frac{\pi}{6}, 2k\pi + \frac{7\pi}{6} \right\}$

ج) $\sin, \cos \neq 0, \cot x \neq 1 \Rightarrow \cos \neq \sin \Rightarrow D_f: \mathbb{R} - \left\{ \frac{k\pi}{2}, k\pi + \frac{\pi}{4} \right\}$

د) $4 \sin^2 x \neq 3 \Rightarrow \sin^2 x \neq \frac{3}{4} \Rightarrow \sin x \neq \pm \frac{\sqrt{3}}{2} \Rightarrow D_f: \mathbb{R} - \left\{ k\pi \pm \frac{\pi}{3} \right\}$

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

$$|x-2| > \frac{1}{4}$$

$$x-2 > \frac{1}{4} \quad \vee \quad x-2 < -\frac{1}{4}$$

$$x > \frac{9}{4} \quad \vee \quad x < -\frac{7}{4}$$

$$D_f: (-\infty, -\frac{7}{4}) \cup (\frac{9}{4}, +\infty)$$

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الف $2|x| \leq 4$

$$|x| \leq 2 \Rightarrow -2 \leq x \leq 2$$

$$D_f: [-2, 2]$$

ب) $\mathbb{R} - \{0\}$

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