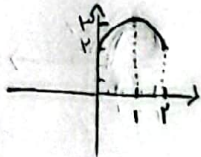
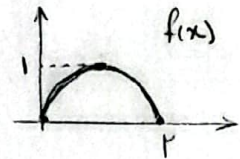
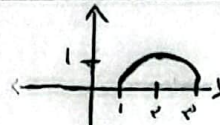


الف) الف

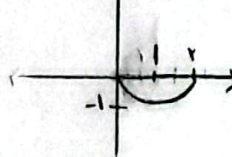
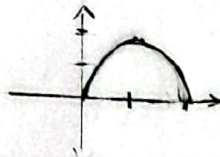


ب) ج)

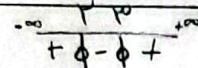


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ب) د)

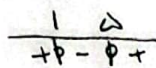


الف) $(x-2)(x-3) > 0 \Rightarrow x = 2, 3$



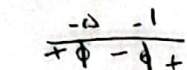
$D = (-\infty, 2) \cup (3, +\infty)$

ب) $(x-1)(x-4) < 0 \Rightarrow x = 1, 4$



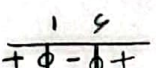
$D = (1, 4)$

ج) $(x+1)(x+4) \geq 0 \Rightarrow x = -1, -4$



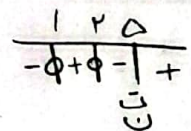
$D = (-\infty, -4] \cup [-1, +\infty)$

د) $(x-1)(x-6) \leq 0 \Rightarrow x = 1, 6$



$D = (-\infty, -1] \cup [6, +\infty)$

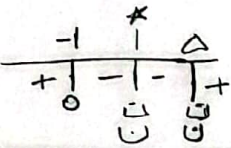
الف) $\frac{(x-1)(x-2)}{x-4} < 0 \Rightarrow x = 1, 2, 4$



$D = (-\infty, 1) \cup (2, 4)$

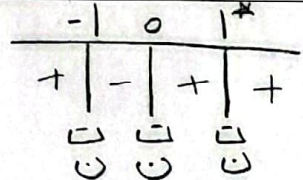
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ب) $\frac{(x+1)(x-1)}{(x-1)(x-4)} \geq 0 \Rightarrow x = \pm 1, 4$



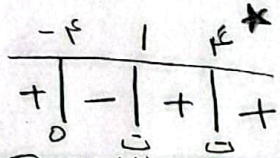
$D = (-\infty, -1] \cup (4, +\infty)$

الف) $\frac{x^3-1}{x^3-x} \geq 0 \Rightarrow \frac{(x-1)(x^2+x+1)}{x(x-1)(x+1)} \geq 0 \Rightarrow x = \pm 1, 0$



$D = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$

ب) $\frac{x^2-16}{x^2-4x+4} \geq 0 \Rightarrow \frac{(x-4)(x+4)}{(x-2)^2} \geq 0 \Rightarrow x = \pm 4, 2$



$D = (-\infty, -4] \cup (1, +\infty)$

الف) $\begin{cases} 4 - \sqrt{2-x} \geq 0 \Rightarrow 4 \geq \sqrt{2-x} \Rightarrow 16 \geq 2-x \Rightarrow x \leq 14 \\ x-2 \geq 0 \Rightarrow x \geq 2 \end{cases}$

$D = [-14, 2]$

ب) $\begin{cases} 3 - \sqrt{2x-2} \geq 0 \Rightarrow 3 \geq \sqrt{2x-2} \Rightarrow 9 \geq 2x-2 \Rightarrow x \leq 11 \\ x-2 \geq 0 \Rightarrow x \geq 2 \end{cases}$

$D = [2, 11]$

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الف) $4 - 2x^2 \geq 0 \Rightarrow 2(2 - x^2) \geq 0 \Rightarrow x = \pm \sqrt{2}$
 $D = [-\sqrt{2}, \sqrt{2}]$

$$\begin{array}{ccc} -\sqrt{2} & \sqrt{2} \\ - & + & + \end{array}$$

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ب) $3|x-9| \geq 0 \Rightarrow 3(|x|-3) \geq 0 \Rightarrow x-9 \geq 0 \rightarrow x \geq 9$
 $x+9 \geq 0 \rightarrow x \geq -9$

$D = [-9, +\infty)$

الف) $|x|-3 \neq 0 \Rightarrow |x| \neq 3 \Rightarrow x = \pm 3 \Rightarrow D = \mathbb{R} - \{\pm 3\}$

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ب) $\sqrt{x} - 3 \neq 0 \Rightarrow \sqrt{x} \neq 3 \Rightarrow x = \pm 9 \rightarrow D = [0, 3), (3, +\infty)$
 $x \geq 0$

الف) $2 \cos x - 1 \neq 0 \Rightarrow \cos x \neq \frac{1}{2} \Rightarrow D = \mathbb{R} - \{2k\pi + \frac{\pi}{3}, 2k\pi - \frac{\pi}{3}\}$

ب) $2 \sin x + 1 \neq 0 \Rightarrow \sin x \neq -\frac{1}{2} \Rightarrow D = \mathbb{R} - \{2k\pi - \frac{\pi}{6}, 2k\pi - \frac{5\pi}{6}\}$

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ج) $\cot x - 1 \neq 0 \Rightarrow \cot x \neq 1 \Rightarrow D = \mathbb{R} - \{k\pi + \frac{\pi}{4}\}$

د) $\sin^2 x - \frac{1}{2} \neq 0 \Rightarrow \sin^2 x \neq \frac{1}{2} \Rightarrow D = \mathbb{R} - \{k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4}\}$



$2|x-2| - \frac{1}{x} > 0 \Rightarrow 2|x-2| > \frac{1}{x} \Rightarrow |x-2| > \frac{1}{x}$
 $D = (-\infty, \frac{1}{2}) \cup (\frac{1}{2}, +\infty)$

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الف) $4 - 2|x| \geq 0 \Rightarrow 2(2 - |x|) \geq 0 \Rightarrow 2 - |x| \geq 0 \Rightarrow |x| \leq 2$

$D = [-2, 2]$

$x \geq 0 \Rightarrow 2 - x \geq 0 \Rightarrow x \leq 2$
 $x < 0 \Rightarrow 2 + x \geq 0 \Rightarrow -2 \leq x$

ب) $\frac{|x|}{|x|} = 1$

$|x| \neq 0 \Rightarrow x \neq 0 \Rightarrow D = (-\infty, 0) \cup (0, +\infty)$

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