

الف، $\frac{x+4}{(x^2-12x+10)(x-1)}$

$D_f = \mathbb{R} - \{1, \omega, 1, \omega\}$

$\frac{x^2-12x+10}{x^2-12x+10} = 1$

$\frac{x^2-12x+10}{x+1} = x^2-12x+10$

$x^2-12x+10=0 \Rightarrow x^2-12x+10=0 \Rightarrow (x-10)(x-2)$
 $x = \frac{10}{2} = 5, \omega \quad x = \frac{2}{2} = 1, \omega$

$\frac{x+4}{(x^2-12x+10)(x-1)}$

$\Delta = 144 - 40 = 104$

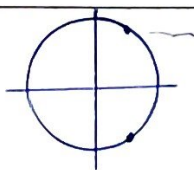
$x = \frac{12 \pm \sqrt{104}}{2} = 6 \pm \sqrt{26}$

$D_f = \mathbb{R} - \{-1, 2, -\frac{2}{5}\}$

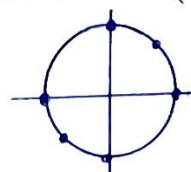
الف، $x - \sqrt{3-2x} \neq 0 \quad x \neq \sqrt{3-2x} \quad x^2 \neq 3-2x \quad x^2+2x-3 \neq 0 \quad (x-1)(x+3) \neq 0$
 $3-2x \geq 0 \quad \frac{3}{2} \geq x \quad 3 > 2x$
 $D_f = (-\infty, \frac{3}{2}] - \{1\}$
 $x \neq 1, -3$

ب، $x - \sqrt{3x-2} \neq 0 \quad x \neq \sqrt{3x-2} \quad x^2 \neq 3x-2 \quad x^2-3x+2 \neq 0$
 $(x-1)(x-2) \neq 0 \quad x \neq 1, 2$
 $D_f = [\frac{2}{3}, +\infty) - \{1, 2\}$

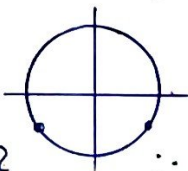
الف، $\cos x \neq 1 \neq 0$
 $\cos x \neq \frac{1}{2}$
 $D_f = \mathbb{R} - \{2k\pi \pm \frac{\pi}{3}\}$



ج، $\begin{cases} \cos \neq 0 \\ \sin \neq 0 \\ \frac{\cos x}{\sin x} \neq 1 \end{cases}$
 $D_f = \mathbb{R} - \{k\frac{\pi}{2}, k\pi + \frac{\pi}{4}\}$



ب، $\sin x + 1 \neq 0$
 $\sin x \neq -1$
 $D_f = \mathbb{R} - \{2k\pi - \frac{\pi}{2}, 2k\pi - \frac{3\pi}{2}\}$



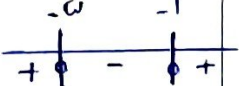
ج، $\sin^2 x - 5 \neq 0$
 $\sin^2 x \neq \frac{5}{2}$
 $\sin x \neq \pm \sqrt{\frac{5}{2}}$
 $D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{2}\}$



الف، $\frac{2}{x-1} + \frac{3}{x-2} > 0$

$D_f = (-\infty, 1) \cup (2, +\infty)$

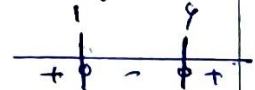
ج، $(x-1)(x+\omega) \geq 0$
 $D_f = (-\infty, -\omega] \cup [-1, +\infty)$



ب، $(x-1)(x-\omega) < 0$



ج، $(x-1)(x-4) \leq 0$

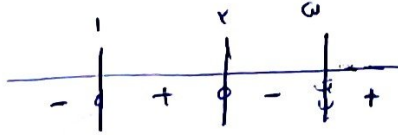


$D_f = (1, \omega)$

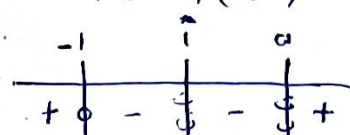
$D_f = [1, 4]$

$D_f = (-\infty, 1) \cup (2, \omega)$

الف، $\frac{(x-1)(x-2)}{x-\omega} < 0$

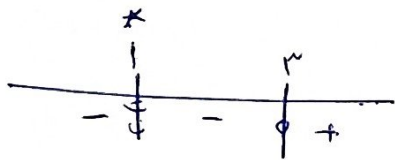


ب، $\frac{(x-1)(x+1)}{(x-\omega)(x-1)} \geq 0$



$D_f = (-\infty, -1] \cup (\omega, +\infty)$

$$\frac{(x-1)(x-3)}{x^2-1} \geq 0$$



$$D_f = [3, +\infty)$$

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

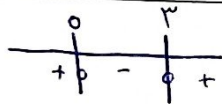
$$x^2 \neq 1$$

$$x \neq \pm 1$$

$$D_f = \mathbb{R} - \{\pm 1\}$$

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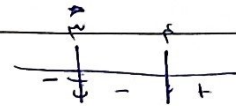
$$\frac{x^2 - 5x}{x(x-3)} > 0$$



$$D_f = (-\infty, 0) \cup (3, +\infty)$$

$$\frac{x^2 \vee x + 12}{x-5} > 0$$

$$\frac{(x-2)(x-6)}{x-5} > 0$$



$$10 - x > 0 \quad 10 > x$$

$$10 - x \neq 1 \quad 9 \neq x$$

$$D_f = (5, 10) - \{9\}$$

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$$14 - x^2 > 0$$

$$-4 < x < 4$$

$$|x| < 2$$

$$|x| > 2$$

$$x > 2$$

$$x < -2$$

$$|x| \neq 1$$

$$|x| \neq 2 \quad x \neq \pm 2$$

$$(-4, -2) \cup (-2, -1) \cup (1, 2) \cup (2, 4)$$

$$D_f = (0, 1) \cup (1, 4)$$

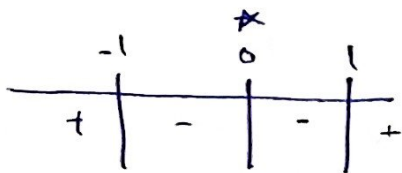
$$x > 0 \quad x \neq 1$$

$$x^2 - 11x + 12 > 0$$

$$(x-4)(x-3) > 0$$



$$y = \frac{x(x-1)}{x(x+1)}$$



	-1	0	1
$x^2 - x$	+	+	-
$x^2 + x$	+	+	+
$P(x)$	+	-	+

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$$\frac{x - f(x)}{f(x)} \geq 0$$

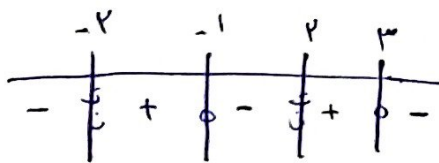
$$x - f(x) = 0$$

$$x = f(x)$$

$$x = -1, 3$$

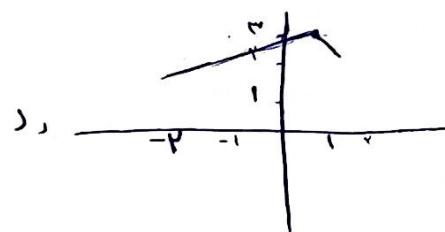
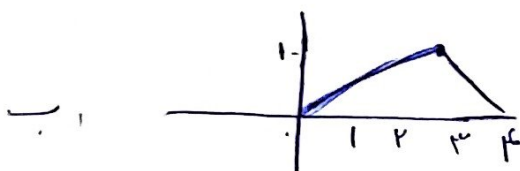
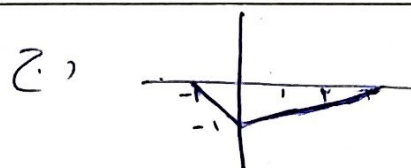
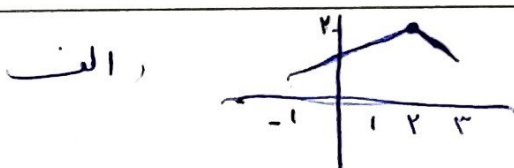
$$f(x) = 0$$

$$x = -2, 2$$



$$D_f = (-2, -1] \cup (2, 3]$$

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