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الف) $x^2 - 2x > 0 \rightarrow x < \frac{2}{x}$

$x - \sqrt{x^2 - 2x} \neq 0 \rightarrow x \neq \sqrt{x^2 - 2x} \Rightarrow x^2 \neq x^2 - 2x \rightarrow (x+2)(x-1) \neq 0$

$\Rightarrow D_f = (-\infty, \frac{2}{x}] \cup \{1\}$

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$\Rightarrow D_f = [\frac{2}{x}, +\infty) - \{1, 2\}$

الف) $\cos x - 1 \neq 0 \rightarrow \cos x \neq \frac{1}{2} \rightarrow D_f = R - \left\{2k\pi \pm \frac{\pi}{3}\right\}$

ب) $\sin x + 1 \neq 0 \rightarrow \sin x \neq -\frac{1}{2} \rightarrow D_f = R - \left\{2k\pi - \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}\right\}$

ج) $\cos x \neq 0$
 $\sin x \neq 0$
 $\cot x - 1 \neq 0 \rightarrow \cot x \neq 1$

$\Rightarrow D_f = R - \left\{\frac{k\pi}{2}, k\pi + \frac{\pi}{4}\right\}$

د) $\sin^2 x - 2 \neq 0 \rightarrow \sin^2 x \neq \frac{2}{x} \rightarrow \sin x \neq \pm \frac{\sqrt{2}}{x} \rightarrow D_f = R - \left\{k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4}\right\}$

الف) $x^2 - 4x + 4 > 0 \rightarrow (x-2)(x-2) > 0 \rightarrow \frac{1}{x-2} > 0 \rightarrow D_f = (-\infty, 2) \cup (2, +\infty)$

ب) $x^2 - 4x + 4 < 0 \rightarrow (x-2)(x-2) < 0 \rightarrow \frac{1}{x-2} < 0 \rightarrow D_f = (2, 4)$

ج) $x^2 + 4x + 4 > 0 \rightarrow (x+2)(x+2) > 0 \rightarrow \frac{-2-1}{x+2} > 0 \rightarrow D_f = (-\infty, -2] \cup [-2, +\infty)$

د) $x^2 - 4x + 4 < 0 \rightarrow (x-2)(x-2) < 0 \rightarrow \frac{1}{x-2} < 0 \rightarrow D_f = [2, 4]$

الف) $\frac{x+1}{(x-1)(x-2)} < 0 \rightarrow \frac{1}{x-1} < 0 \rightarrow D_f = (-\infty, 1) \cup (2, +\infty)$

ب) $\frac{x+1}{(x-1)(x-2)} > 0 \rightarrow \frac{1}{x-1} > 0 \rightarrow D_f = (-\infty, -1] \cup (2, +\infty)$

$$\text{الف } \frac{x^2 - f(x) + r}{x^2 - 1} > 0 \rightarrow \frac{x^2 - 1}{(x-1)(x+1)} > 0 \rightarrow -\frac{1}{0} - \frac{r}{0} + \rightarrow D_f = [r, +\infty)$$

$$\rightarrow x^2 - 1 \neq 0 \rightarrow x \neq \pm 1 \rightarrow D_f \subset \mathbb{R} - \{\pm 1\}$$

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$$\text{الف } \frac{x^2 - 2x}{x^2 - 1} > 0 \rightarrow \frac{x(x-2)}{(x-1)(x+1)} > 0 \rightarrow D_f = (-\infty, 0) \cup (r, +\infty)$$

$$\begin{cases} \text{ب } \textcircled{1} 14 - x > 0 \rightarrow x < 14 \rightarrow -f(x) < f \\ \textcircled{2} |x| - 2 > 0 \rightarrow |x| > 2 \rightarrow x > 2 \text{ or } x < -2 \\ \textcircled{3} |x| - 2 \neq 1 \rightarrow |x| \neq 3 \rightarrow x \neq \pm 3 \end{cases} \quad D_f = (-f, -2) \cup (r, f) - \{\pm 3\}$$

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$$\text{ج } \textcircled{1} \frac{x^2 - 7x + 11}{x^2 - 3} > 0 \rightarrow \frac{(x-3)(x-4)}{x-3} > 0 \rightarrow -\frac{3}{0} - \frac{f}{0} + \quad D_f = (f, 10) - \{9\}$$

$$\textcircled{2} 10 - x > 0 \rightarrow x < 10$$

$$\textcircled{3} 10 - x \neq 1 \rightarrow x \neq 9$$

$$\begin{cases} \text{د } \textcircled{1} \frac{x^2 - 11x + 28}{x^2 - 5} > 0 \rightarrow \frac{(x-4)(x-7)}{(x-5)(x+5)} > 0 \rightarrow \frac{r}{+0} - \frac{v}{-0} + \\ \textcircled{2} 24 - x^2 > 0 \rightarrow x^2 < 24 \rightarrow -4 < x < 4 \end{cases} \quad D_f = (0, f] - \{1\}$$

$$\textcircled{3} x > 0 \quad \textcircled{4} x \neq 1$$

$$\text{هـ } \frac{x^2 - x}{x(x-1)} > 0 \rightarrow \frac{x(x-1)}{x(x-1)} > 0 \rightarrow \frac{-1}{+0} - \frac{0}{-0} +$$

و.ب.ب

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

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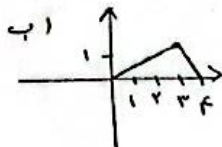
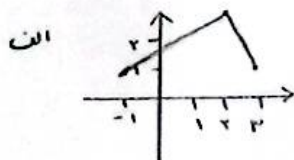
$$\frac{x - f(x)}{f(x)} > 0 \rightarrow \frac{-x - 1}{-x + 1} > 0$$

$$x - f(x) < 0 \rightarrow f(x) < x \rightarrow x < 3, -1$$

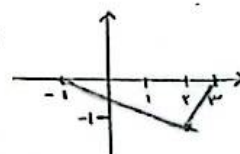
$$f(x) \neq 0 \rightarrow x \neq \pm 2$$

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

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د)

