

الف) $y = \frac{x+5}{x^3-2x^2+3x-15} \Rightarrow \frac{x+5}{(x-5)(x^2+3x+3)} \Rightarrow D_f = R - \{1, \frac{5}{3}, \frac{5}{2}\}$

ب) $y = \frac{x+3}{3x^3-x^2-1x-4} \Rightarrow \frac{x+3}{(x+1)(x-2)(x+\frac{4}{3})} \Rightarrow D_f = R - \{-1, -\frac{2}{3}, 2\}$

الف) $y = \frac{x+1}{x-\sqrt{3-2x}} \Rightarrow D_f = (-\infty, \frac{3}{2}] \cup [\frac{3}{2}, +\infty) - \{1, 2\}$

ب) $y = \frac{x+2}{x-\sqrt{3x-2}} \Rightarrow D_f = [\frac{2}{3}, +\infty) - \{1, 2\}$

الف) $y = \frac{\sin x}{2\cos x-1} \Rightarrow D_f = R - \{2k\pi \pm \frac{\pi}{3}\}$

ب) $y = \frac{\cos x+1}{2\sin x+1} \Rightarrow D_f = R - \{2k\pi - \frac{\pi}{2}, 2k\pi + \frac{3\pi}{2}\}$

ج) $y = \frac{\tan x+2}{\cot x-1} \Rightarrow D_f = R - \{\frac{k\pi}{2}, k\pi + \frac{\pi}{2}\}$

د) $y = \frac{\sin x+1}{\sin^2 x-2} \Rightarrow D_f = R - \{k\pi + \frac{\pi}{2}, k\pi + \frac{3\pi}{2}\}$

الف) $x^2-5x+6 > 0 \Rightarrow (x-2)(x-3) > 0 \Rightarrow D_f = (-\infty, 2) \cup (3, +\infty)$

ب) $x^2-4x+4 < 0 \Rightarrow (x-2)^2 < 0 \Rightarrow D_f = (1, 2)$

ج) $x^2+5x+6 > 0 \Rightarrow (x+1)(x+6) > 0 \Rightarrow D_f = (-\infty, -6) \cup (-1, +\infty)$

د) $x^2-4x+4 < 0 \Rightarrow (x-2)^2 < 0 \Rightarrow D_f = [1, 2]$

الف) $\frac{x^2 - 3x + 2}{x - 2} < 0 \Rightarrow \frac{(x-1)(x-2)}{x-2} < 0 \Rightarrow \frac{x-1}{1} < 0 \Rightarrow x < 1 \Rightarrow D_f = (-\infty, 1) \cup (2, \infty)$

-d

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

-g

الف) $y = \sqrt{\frac{x^2 - 5x + 3}{x^2 - 1}} \Rightarrow \frac{x^2 - 5x + 3}{x^2 - 1} > 0 \Rightarrow \frac{(x-1)(x-4)}{x^2 - 1} > 0 \Rightarrow \frac{x-4}{x+1} > 0 \Rightarrow D_f = [3, +\infty)$

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ب) $y = \sqrt{\frac{x^2 - 5x + 3}{x^2 - 1}} < 0 \Rightarrow x^2 - 1 \neq 0 \Rightarrow x^2 \neq 1 \Rightarrow x \neq \pm 1 \Rightarrow D_f = \mathbb{R} - \{\pm 1\}$

-V

الف) $y = \log(x^2 - 3x) \Rightarrow x^2 - 3x > 0 \Rightarrow x(x-3) > 0 \Rightarrow D_f = (-\infty, 0) \cup (3, +\infty)$

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ب) $y = \log \frac{1-x^2}{|x|-3} \Rightarrow \begin{cases} 1-x^2 > 0 \Rightarrow x^2 < 1 \Rightarrow -1 < x < 1 \\ |x|-3 > 0 \Rightarrow |x| > 3 \Rightarrow x > 3 \text{ or } x < -3 \\ |x|-3 \neq 0 \Rightarrow |x| \neq 3 \Rightarrow x \neq \pm 3 \end{cases} \Rightarrow D_f = (-3, -1) \cup (1, 3) - \{\pm 3\}$

ج) $y = \log \frac{x^2 - 3x + 1}{1-x} \Rightarrow \begin{cases} \frac{x^2 - 3x + 1}{1-x} > 0 \Rightarrow \frac{(x-1)(x-2)}{1-x} > 0 \Rightarrow \frac{x-2}{x-1} > 0 \\ 1-x > 0 \Rightarrow x < 1 \\ 1-x \neq 0 \Rightarrow x \neq 1 \end{cases} \Rightarrow D_f = (2, 1) - \{1\}$

د) $y = \sqrt{x^2 - 11x + 18} + \log x \Rightarrow \begin{cases} x^2 - 11x + 18 > 0 \Rightarrow (x-2)(x-9) > 0 \\ x > 0 \end{cases} \Rightarrow D_f = (0, 2] \cup [9, +\infty)$

روش صریح
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$y = \frac{x^2 - x}{x^2 + x} \Rightarrow \frac{x(x-1)}{x(x+1)} \Rightarrow \frac{x-1}{x+1}$

$x^2 - x$	+	+	0	-	+
$x^2 + x$	+	0	-	+	+
$p(x)$	+	0	-	0	+

-A

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$y = \sqrt{\frac{x-f(x)}{f(x)}} \Rightarrow \begin{cases} \frac{x-f(x)}{f(x)} > 0 \Rightarrow \frac{-x-1}{x-1} > 0 \\ x-f(x) = 0 \Rightarrow f(x) = x \Rightarrow x = 3, -1 \\ f(x) \neq 0 \Rightarrow x \neq \pm 1 \end{cases} \Rightarrow D_f = (-1, 3] \cup (3, 1)$

-9

2

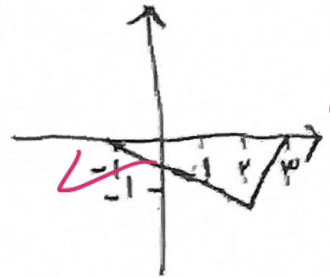
الف) $f(x)+1 \Rightarrow$



ب) $f(x-1) \Rightarrow$



ج) $-f(x) \Rightarrow$



د)

د) $f(x+1)+2 \Rightarrow$

