

الف) $\frac{x+2}{x^2-2x+3x-10} = \frac{x+2}{(x-1)(x-2)(x-5)}$ $\frac{x^2-2x+3x-10}{x^2-14x+10} \mid x-1$

$D_f = \mathbb{R} - \left\{ \frac{1}{2}, \frac{2}{3}, 1 \right\}$ $D_f = \mathbb{R} - \left\{ -1, -\frac{2}{3}, 2 \right\}$

ب $\frac{x+2}{(x+1)(x^2-4x-5)} = \frac{x^2-4x-5}{(x+1)(x^2-4x-5)} \rightarrow (x^2-4x-5) = (x-5)(x+1)$

$y = \frac{x+1}{x-\sqrt{3}-2}$ $3-2x \gg$ $x < \frac{3}{2}$

$x - \sqrt{3} - 2 \neq 0$ $3 - 2x \neq 0$

$x^2 + 2x - 2 \neq 0$ $(x-2)(x+1)$

$D_f = (-\infty, \frac{3}{2}] - \{1\}$

$y = \frac{x+2}{x-\sqrt{3}-2}$ $3x-2 \gg$ $x > \frac{2}{3}$

$3x - 2 \neq 0$ $x^2 - 2x + 2 \neq 0$

$x=1$ $x=2$ $(x-1)(x-2) \neq 0$

$D_f = [\frac{2}{3} + \infty) - \{1, 2\}$

الف) $y = \frac{\sin x}{\cos x} = \tan x$ $\cos x - 1 \neq 0$

$\cos x \neq \frac{1}{2}$ $D_f = \mathbb{R} - \left\{ 2k\pi + \frac{\pi}{3}, 2k\pi + \frac{5\pi}{3} \right\}$

ب $\frac{\tan x + 2}{\cot x - 1}$ $\frac{\cos \rightarrow \frac{1}{2}}{\sin \rightarrow \frac{\sqrt{3}}{2}}$ $\cot x \neq 1$ $D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{4}, k\pi + \frac{5\pi}{4} \right\}$

ب $y = \frac{\cos x + 1}{\sin x + 1} = \frac{1 + \cos x}{1 + \sin x}$ $\sin x + 1 \neq 0$

$\sin x \neq -1$ $D_f = \mathbb{R} - \left\{ 2k\pi + \frac{3\pi}{2}, 2k\pi + \frac{7\pi}{2} \right\}$

$\frac{\sin x + 1}{\sin x - 1}$ $\sin x \neq \frac{1}{2}$ $\sin x = \pm \frac{\sqrt{3}}{2}$ $D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{6}, k\pi + \frac{5\pi}{6} \right\}$

الف $x^2 - 5x + 6 \geq 0 \rightarrow (x-2)(x-3) \geq 0$

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

ب $x^2 + 4x + 5 \geq 0 \rightarrow (x+1)(x+5) \geq 0$

$D_f = \mathbb{R} - (-5, -1)$

ب $x^2 - 4x + 5 < 0 \rightarrow (x-1)(x-5) < 0$

$D_f = (1, 5)$

ب $x^2 - 7x + 6 \leq 0 \rightarrow (x-1)(x-6) \leq 0$

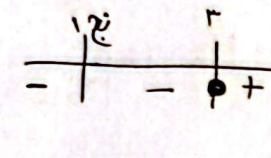
$D_f = [1, 6]$

الف $\frac{x^2-3x+2}{x-5} < \frac{(x-1)(x-2)}{x-5}$

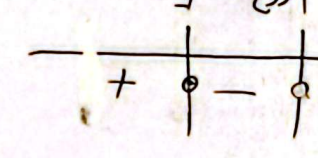
$D_f = (-\infty, 1) \cup (2, 5)$

ب $\frac{x^2-1}{x^2-4x+5} \geq \frac{(x+1)(x-1)}{(x-1)(x-5)}$

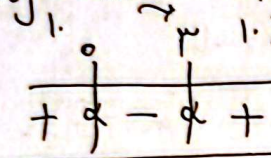
$D_f = [-1, 5) - \{1\}$

$$\sqrt{\frac{x^2 - 4x + 3}{x^2 - 1}} \rightsquigarrow \frac{(x-1)(x-3)}{(x-1)(x+1)} \rightsquigarrow \frac{x-3}{x+1}$$


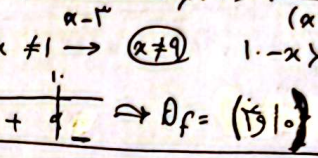
$D_f = [3, +\infty)$

$$\sqrt{\frac{x^2 - 4x + 3}{x^2 - 1}} \rightsquigarrow \frac{x^2 - 4x + 3}{x^2 - 1}$$


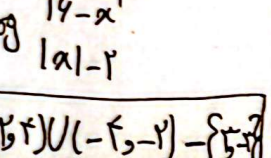
$D_f = \mathbb{R} - \{1, -1\}$

$$\log \frac{x^2 - 2x}{x^2 - 1} \rightsquigarrow \frac{x(x-2)}{(x-1)(x+1)}$$


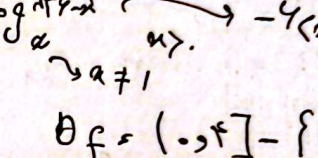
$D_f = (-\infty, 0) \cup (1, +\infty)$

$$\log \frac{x^2 - 4x + 1}{x^2 - 1} \rightsquigarrow \frac{x^2 - 4x + 1}{x^2 - 1}$$


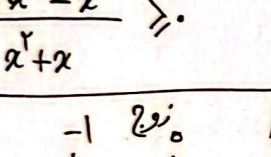
$D_f = (1, 3) \cup (9, +\infty)$

$$\log \frac{14 - x^2}{|x| - 2} \rightsquigarrow \frac{14 - x^2}{|x| - 2}$$


$D_f = (2, 3.5) \cup (-3.5, -2)$

$$y = \sqrt{x^2 - 11x + 18} + \log \frac{x^2 - 2x}{x^2 - 1}$$


$D_f = (0, 4] \cup (9, +\infty)$

$$\frac{x^2 - 2}{x^2 + x} \rightsquigarrow \frac{x(x-2)}{x(x+1)}$$


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

x	-	-	+	+
$x-1$	-	-	-	+
x	-	-	+	+
$x+1$	-	+	+	+
$P(x)$	+	-	-	+

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

$$y = \sqrt{\frac{x - f(x)}{f(x)}}$$

$\text{شروط مسدود} = 3, -1$
 $\text{شروط منبج} = -2, 2$

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

$x - f(x)$	-	+	+	-
$f(x)$	+	-	+	+
$y = \sqrt{\dots}$	+	-	+	-

تقاطع دالة مع المحاور

