

الف

تكليف

مدرسة

بنما

الف) $\frac{x+2}{x^3-14x^2+15x-12} \rightarrow x^3-14x^2+15x-12 = \text{سوال 1:}$

$(x-1)(x^2-14x+12) / (x^2-14x+12) \Rightarrow x-1 \rightarrow$
 $\downarrow$
 $x \neq 1$

$\rightarrow (x-1)(x-10) \rightarrow x \neq \frac{4}{5}, \frac{10}{5} \quad Df = R - \{1, 2, 3, 4\}$

ب) $\frac{x+2}{x^3-14x^2+15x-12} \rightarrow x^3-14x^2+15x-12 =$

$(x+1)(x^2-14x+12) \quad x \neq 1 \quad x^2-14x+12 \rightarrow x^2-14x+12$

$= (x-4)(x+2) \rightarrow x \neq \frac{4}{5}, \frac{-2}{5} \quad Df = R - \{-1, \frac{5}{2}, 2\}$

الف) $\frac{x+1}{x-\sqrt{5-2x}} \rightarrow x-\sqrt{5-2x} \neq 0, 5-2x \geq 0$

$5-2x \geq 0, 5 \geq 2x \rightarrow 1, 5 \geq x$

$x-\sqrt{5-2x} \neq 0 \rightarrow x \neq \sqrt{5-2x} \rightarrow x^2 \neq 5-2x \rightarrow x^2+2x-5 \neq 0$

$x^2+2x-5 = (x-1)(x+5) \neq 0 \rightarrow x \neq 1, -5 \rightarrow Df = (-\infty + 1, 5) - \{1, -5\}$

ب) $\frac{x+2}{x-\sqrt{5x-2}} \rightarrow 5x-2 \geq 0 \rightarrow 5x \geq 2 \rightarrow x \geq \frac{2}{5}$

$x-\sqrt{5x-2} \neq 0 \rightarrow x \neq \sqrt{5x-2} \rightarrow x^2 \neq 5x-2 \rightarrow x^2-5x+2 \neq 0$

$\rightarrow (x-1)(x-2) \neq 0 \rightarrow x \neq 1, 2 \rightarrow Df = \left\{ \frac{2}{5}, +\infty \right\} - \{1, 2\}$

الف) $y = \frac{\sin x}{2\cos x - 1} \rightarrow 2\cos x - 1 \neq 0 \rightarrow 2\cos x \neq 1 \rightarrow \cos x \neq \frac{1}{2}$

$\rightarrow Df = R - \left\{ 2k\pi + \frac{\pi}{3}, 2k\pi + \frac{2\pi}{3} \right\} = R - \left\{ 2k\pi + \frac{\pi}{3}, 2k\pi + \frac{2\pi}{3} \right\}$

ب) $y = \frac{\cos x + 1}{2\sin x + 1} \rightarrow 2\sin x + 1 \neq 0 \rightarrow 2\sin x \neq -1 \rightarrow \sin x \neq -\frac{1}{2}$

$\rightarrow Df = R - \left\{ 2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6} \right\} = R - \left\{ 2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6} \right\}$

ج) $y = \frac{\tan x + 1}{\cot x - 1}$ ^{معيار} $\cot x \neq 1 \rightarrow \cot x - 1 \neq 0 \rightarrow \cot x \neq 1$

$\rightarrow Df = \mathbb{R} - \left\{ K\pi, K\pi + \frac{1}{2}, K\pi + \frac{\pi}{4} \right\}$

د) $y = \frac{\sin x + 1}{\sin^2 x - 1}$ $\rightarrow \sin^2 x - 1 \neq 0 \rightarrow \sin^2 x \neq 1 \rightarrow \sin x \neq \pm 1$

$\rightarrow \sin x \neq \pm 1 \rightarrow Df = \mathbb{R} - \left\{ 2K\pi + \frac{\pi}{2}, 2K\pi + \frac{3\pi}{2} \right\}$

الف) $x^2 - 2x + 4 > 0 \rightarrow (x-1)(x-3) > 0 \rightarrow$

$\begin{array}{c|cc} x & 1 & 3 \\ \hline & + & - \\ \hline & + & - \end{array} \rightarrow Df = (1, +\infty) \cup (-\infty, 3)$

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

$\begin{array}{c|cc} x & 1 & 2 \\ \hline & + & - \\ \hline & + & - \end{array} \rightarrow Df = (1, 2)$

ج) $x^2 + 4x + 4 \geq 0 \rightarrow (x+2)(x+2) \geq 0 \rightarrow \begin{array}{c|cc} x & -2 & -2 \\ \hline & + & - \\ \hline & + & - \end{array}$

$\rightarrow Df = (-\infty, -2] \cup [-2, +\infty)$

د) $x^2 - 5x + 4 \leq 0 \rightarrow (x-1)(x-4) \leq 0 \rightarrow \begin{array}{c|cc} x & 1 & 4 \\ \hline & + & - \\ \hline & + & - \end{array}$

$\rightarrow Df = [1, 4]$

الف) $\frac{x^2 - 2x + 1}{x - 1} < 0 \rightarrow \frac{(x-1)(x-1)}{x-1} < 0 \rightarrow \begin{array}{c|cc} x & 1 & 1 \\ \hline & + & - \\ \hline & + & - \end{array}$

$\rightarrow Df = (-\infty, 1) \cup (1, +\infty)$

ب) $\frac{x^2 - 1}{x^2 - 4x + 4} \geq 0 \rightarrow \frac{(x-1)(x+1)}{(x-2)(x-2)} \geq 0 \rightarrow \begin{array}{c|cc} x & -1 & 1 & 2 \\ \hline & + & - & - \\ \hline & + & - & - \end{array}$

$\rightarrow Df = (-\infty, -1] \cup [1, +\infty)$

الف) $y = \sqrt{\frac{x^2 - 5x + 5}{x^2 - 1}} \rightarrow \frac{x^2 - 5x + 5}{x^2 - 1} \geq 0 \rightarrow \frac{(x-5)(x-1)}{x^2 - 1}$

$\rightarrow \frac{x}{-} \mid \frac{1}{-} \frac{5}{+}$ $\rightarrow Df = \{5, +\infty\}$

ب) $y = \sqrt{\frac{x^2 - 5x + 5}{x^2 - 1}} \rightarrow x^2 - 1 \neq 0 \rightarrow x^2 \neq 1 \rightarrow x \neq 1, -1$

$\rightarrow Df = \mathbb{R} - \{1, -1\}$

الف) $y = \log(x^2 - 5x) \rightarrow x^2 - 5x > 0 \rightarrow x(x-5) > 0 \rightarrow x \neq 0, 5$

$\rightarrow Df = \mathbb{R} - \{0, 5\}$

ب) $y = \log \frac{14x^2}{|x| - 5} \rightarrow 14 - x^2 > 0 \rightarrow 14 > x^2 \rightarrow -\sqrt{14} < x < \sqrt{14}$

$|x| - 5 > 0 \rightarrow |x| > 5 \rightarrow x > 5, x < -5, |x| - 5 \neq 1 \rightarrow |x| \neq 6$

$\rightarrow x \neq 6, -6 \rightarrow Df = (-\sqrt{14}, -5) \cup (5, \sqrt{14}) - \{6, -6\}$

ج) $y = \log \frac{x^2 - \sqrt{x} + 1}{10 - x} \rightarrow \frac{x^2 - \sqrt{x} + 1}{x - 5} > 0 \rightarrow \frac{(x-5)(x-1)}{x-5} > 0$

$x \mid \frac{5}{-} \frac{1}{+}$, $10 - x > 0 \rightarrow 10 > x$

$10 - x + 1 \rightarrow 9 \neq x \rightarrow Df = (5, 10) - \{9\}$

د) $y = \frac{\sqrt{x^2 - 1}x + 21}{(x-4)(x-5)} + \log \sqrt{54 - x^2}$

$(x-4)(x-5) \geq 0 \rightarrow \frac{x}{+} \mid \frac{4}{+} \frac{5}{-}$, $54 - x^2 \geq 0 \rightarrow 54 > x^2$

$\rightarrow 4 > x > -4, x > 0, x \neq 1 \rightarrow Df = \{4, 0\} - \{1\}$

$$y = \frac{x^2 - x}{x^2 + x} \rightarrow \frac{x(x-1)}{x(x+1)}$$

-1

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

اوتى، آت، تى

$$\begin{array}{c} \text{جواب} \\ \text{مربع} \end{array} \rightarrow \begin{array}{c|c|c|c} x & -1 & 0 & 1 \\ \hline + & - & - & + \end{array}$$

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

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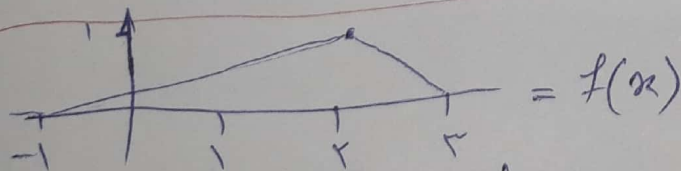
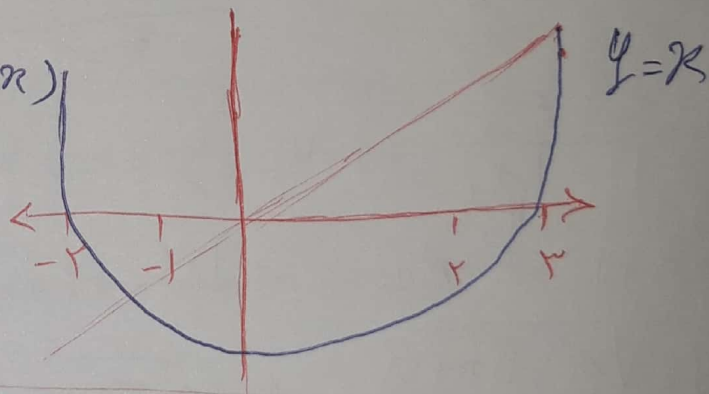
$$y = \sqrt{\frac{x-f(x)}{f(x)}}$$

-9

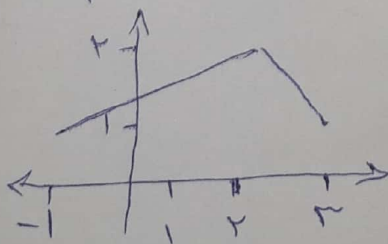
$$x = (-5, 5) \quad f(x)$$

$$f(x) \neq 0 \rightarrow x \neq 5, -5$$

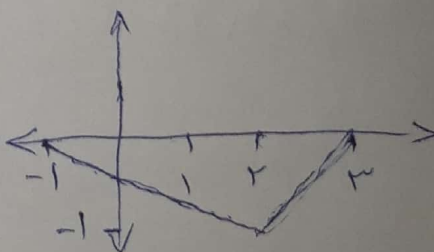
$$Df = (-\infty, 5) \cup (5, +\infty)$$



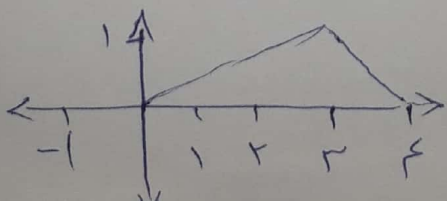
$$f(x) + 1 \rightarrow$$



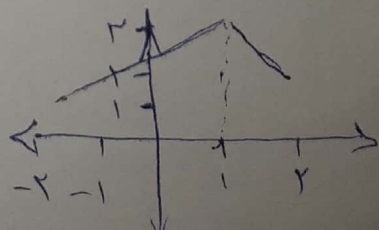
$$-f(x) \rightarrow$$



$$f(x+1) \rightarrow$$



$$f(x+1) + 2 \rightarrow$$



-10