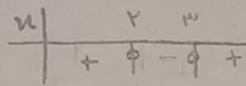


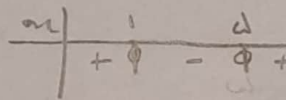
-۲

الف) $x^2 - 5x + 6 > 0$
 $(x-2)(x-3) > 0$



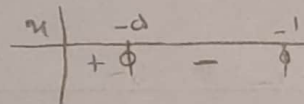
$D_f = (-\infty, 2) \cup (3, +\infty)$

ب) $x^2 - 6x + 5 < 0$
 $(x-1)(x-5) < 0$



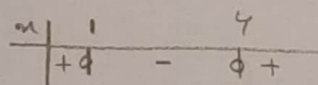
$D_f = (1, 5)$

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



$D_f = [-5, +\infty) \cup (-\infty, -1]$

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

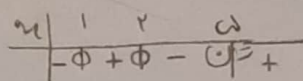


$D_f = [1, 6]$

-۳

الف) $\frac{x^2 - 3x + 2}{x - 5} < 0$

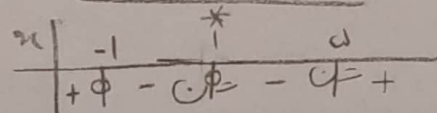
$\frac{(x-1)(x-2)}{x-5}$



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

ب) $\frac{x^2 - 1}{x^2 - 6x + 5} \geq 0$

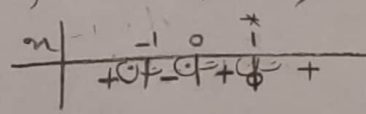
$\frac{(x-1)(x+1)}{(x-1)(x-5)}$



$D_f = [-1, 1] \cup (5, +\infty)$

الف) $y = \sqrt{\frac{x^3 - 1}{x^3 - x}}$
 $\frac{(x-1)(x^2 + x + 1)}{x(x-1)(x+1)}$

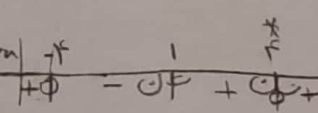
$\frac{x^3 - 1}{x^3 - x} \geq 0$



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

ب) $y = \sqrt{\frac{x^2 - 16}{x^2 - 5x + 4}}$

$\frac{(x-4)(x+4)}{(x-1)(x-4)}$



$D_f = (-\infty, -4] \cup (1, 4) \cup (4, +\infty)$

الف) $y = \sqrt{4 - \sqrt{2-x}}$ $2-x \geq 0 \Rightarrow x \leq 2$ $4 - \sqrt{2-x} \geq 0 \Rightarrow \sqrt{2-x} \leq 4 \Rightarrow 2-x \leq 16 \Rightarrow x \geq -14$

ب) $y = \sqrt{3 - \sqrt{x-2}}$ $x-2 \geq 0 \Rightarrow x \geq 2$ $3 - \sqrt{x-2} \geq 0 \Rightarrow \sqrt{x-2} \leq 3 \Rightarrow x-2 \leq 9 \Rightarrow x \leq 11$

$\Rightarrow D_f = [-14, 2] \cup [2, 11] = [-14, 11]$

الف) $y = \sqrt{4 - 2x^2}$ $4 - 2x^2 \geq 0 \Rightarrow 2(2 - x^2) \geq 0 \Rightarrow x^2 \leq 2 \Rightarrow x = \sqrt{2}, -\sqrt{2}$

ب) $y = \sqrt{3|x| - 9}$ $3|x| - 9 \geq 0 \Rightarrow |x| \geq 3 \Rightarrow x \geq 3 \text{ or } x \leq -3$

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

الف) $y = \sqrt{\frac{|x|+1}{|x|-3}}$ $|x| - 3 \neq 0 \Rightarrow |x| \neq 3 \Rightarrow x \neq 3, -3$

ب) $y = \sqrt{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$ $\sqrt{x} - 3 \neq 0 \Rightarrow \sqrt{x} \neq 3 \Rightarrow x \neq 9$

$\sqrt{x} \geq 0 \Rightarrow x \geq 0 \Rightarrow D_f = [0, 9) \cup (9, +\infty)$

الف) $y = \frac{\sin x}{2 \cos x - 1} \neq 0 \Rightarrow 2 \cos x \neq 1 \Rightarrow \cos x \neq \frac{1}{2}$ از روی دایره مثلثاتی $\Rightarrow 60^\circ, 300^\circ = \frac{\pi}{3}, \frac{5\pi}{3}$

ب) $y = \frac{\cos x + 1}{2 \sin x + 1} \neq 0 \Rightarrow 2 \sin x \neq -1 \Rightarrow \sin x \neq -\frac{1}{2}$ از روی دایره مثلثاتی $\Rightarrow 210^\circ, 330^\circ = \frac{7\pi}{6}, \frac{11\pi}{6}$

ج) $y = \frac{\tan x + 2}{\cot x - 1} \neq 0 \Rightarrow \cot x \neq 1 \Rightarrow \frac{\cos x}{\sin x} \neq 1 \Rightarrow \cos x \neq \sin x$

د) $y = \frac{\sin^2 x + 1}{2 \sin^2 x - 3} \neq 0 \Rightarrow 2 \sin^2 x \neq 3 \Rightarrow \sin^2 x \neq \frac{3}{2} \Rightarrow \sin x \neq \pm \sqrt{\frac{3}{2}}$

الف) $y = \frac{1}{\sqrt{2|x-1| - \frac{1}{2}}}$ $2|x-1| - \frac{1}{2} > 0 \Rightarrow 2|x-1| > \frac{1}{2} \Rightarrow |x-1| > \frac{1}{4} \Rightarrow x < \frac{3}{4} \text{ or } x > \frac{5}{4}$

ب) $y = \sqrt{\frac{|x|}{|x|}}$ $|x| \geq 0 \Rightarrow x \neq 0 \Rightarrow D_f = \mathbb{R} - \{0\}$