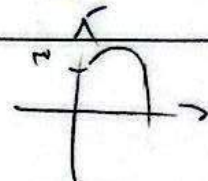
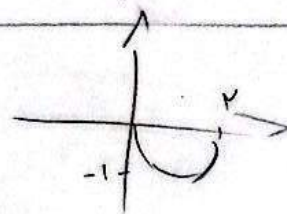




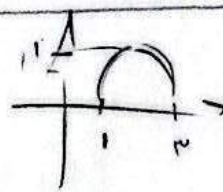
(ب)



(الف)



(د)



(ج)

الف)  $x^2 - 6x + 5 < 0$   
 $(x-1)(x-5)$   
 $\leftarrow \begin{array}{ccccc} & 1 & & 5 & \\ & + & 0 & - & 0 & + \end{array} \rightarrow$   
 $(1 \quad 5)$

ب)  $x^2 - 5x + 4 > 0$   
 $(x-2)(x-3)$   
 $\leftarrow \begin{array}{ccccc} & 2 & & 3 & \\ & + & 0 & - & 0 & + \end{array} \rightarrow$   
 $[-\infty, 2) \cup (3, +\infty)$

ج)  $x^2 - 7x + 6 \leq 0$   
 $(x-1)(x-6)$   
 $\leftarrow \begin{array}{ccccc} & 1 & & 6 & \\ & + & 0 & - & 0 & + \end{array} \rightarrow$   
 $[1 \quad 6]$

د)  $x^2 + 6x + 5 \geq 0$   
 $(x+1)(x+5)$   
 $\leftarrow \begin{array}{ccccc} & -5 & & -1 & \\ & + & 0 & - & 0 & + \end{array} \rightarrow$   
 $[-\infty, -5] \cup [-1, +\infty]$

الف)  $\frac{x^2 - 3x + 2}{x - 5} < 0$   
 $\frac{(x-1)(x-2)}{x-5}$   
 $D_f = [-\infty, 1) \cup (2, 5)$

$\leftarrow \begin{array}{ccccc} & 1 & & 2 & & 5 \\ & + & 0 & - & 0 & + \end{array} \rightarrow$

ب)  $\frac{x^2 - 1}{x^2 - 4x + 5} \geq 0$   
 $\frac{(x-1)(x+1)}{(x-1)(x-5)}$   
 $\leftarrow \begin{array}{ccccc} & -1 & & 1 & & 5 \\ & - & 0 & + & 0 & - & + \end{array} \rightarrow$   
 $D_f = [-1, 1) \cup (5, +\infty)$

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

ب)  $y = \sqrt{\frac{x^2 - 16}{x^2 - 5x + 4}} \sqrt{\frac{(x+4)(x-4)}{(x-4)(x-1)}}$   $D_f = \mathbb{R} - \{4, 1\}$

الف)  $y = \sqrt{4 - \sqrt{4 - x}}$   
 $4 - \sqrt{4 - x} \geq 0 \Rightarrow \sqrt{4 - x} \leq 4 \Rightarrow 4 - x \leq 16 \Rightarrow x \geq -12$   
 $4 - \sqrt{4 - x} \geq 0 \Rightarrow \sqrt{4 - x} \leq 4 \Rightarrow 4 - x \leq 16 \Rightarrow x \geq -12$

ب)  $y = \sqrt{3 - \sqrt{x - 3}}$   
 $3 - \sqrt{x - 3} \geq 0 \Rightarrow \sqrt{x - 3} \leq 3 \Rightarrow x - 3 \leq 9 \Rightarrow x \leq 12$   
 $3 - \sqrt{x - 3} \geq 0 \Rightarrow \sqrt{x - 3} \leq 3 \Rightarrow x - 3 \leq 9 \Rightarrow x \leq 12$

$$\text{الف) } y = \sqrt{4 - x^2} \quad 4 - x^2 \geq 0 \quad x^2 \leq 4$$

$$x^2 \leq 4 \quad \boxed{-2 \leq x \leq 2}$$

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

$$3|x| \geq 9 \quad |x| \geq 3 \quad \boxed{-3 \leq x \leq 3}$$

6

7

$$\text{الف) } y = \sqrt{\frac{|x|+1}{|x|+3}} \quad D_f = \mathbb{R} - \{ \pm 3 \}$$

$$\text{ب) } y = \sqrt{\frac{\sqrt{x}+1}{\sqrt{x}-3}} \quad D_f = \mathbb{R} - \{ 9 \}$$

|                                                                                                                                 |                                                                                                           |                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| $\frac{\cos x + 1}{\sin x + 1} \quad \sin x + 1 \neq 0$<br>$\sin x \neq -1$<br>$D_f = \mathbb{R} - \{ k\pi + \frac{3\pi}{2} \}$ | $\frac{\sin x}{\cos x - 1} \quad \cos x - 1 \neq 0$<br>$\cos x \neq 1$<br>$D_f = \mathbb{R} - \{ k\pi \}$ | $\frac{\tan x + 1}{\cot x - 1} \quad \cot x - 1 \neq 0$<br>$\cot x \neq 1$<br>$D_f = \mathbb{R} - \{ k\pi + \frac{\pi}{4} \}$ |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|

8

$$y = \frac{1}{\sqrt{x|x-2| - \frac{1}{x}}} \quad x|x-2| - \frac{1}{x} > 0$$

$$x|x-2| > \frac{1}{x} \quad \boxed{\frac{1}{x} > x-2 > \frac{1}{x}}$$

9

$$\text{الف) } y = \sqrt{5 - 2|x|} \quad 5 - 2|x| \geq 0$$

$$2|x| \leq 5 \quad |x| \leq \frac{5}{2} \quad \boxed{-\frac{5}{2} \leq x \leq \frac{5}{2}}$$

$$\text{ب) } y = \sqrt{\frac{|x|}{|x|}} \quad D_f = \mathbb{R} - \{ 0 \}$$

10