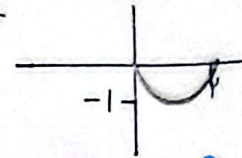
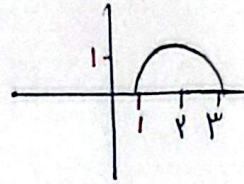
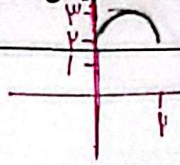
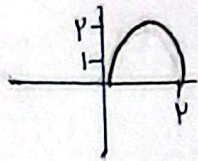


الف) $f(x) + 2$

ب) $2f(x)$

ج) $f(x-1)$

د) $-f(x)$



الف) $x^2 - 5x + 6 > 0 \Rightarrow (x-3)(x-2) > 0$ $x \mid \begin{array}{ccc} 1 & 3 & \\ + & - & + \end{array}$ $(-\infty, 2) \cup (3, +\infty)$

ب) $x^2 - 6x + 5 < 0 \Rightarrow (x-1)(x-5) < 0$ $x \mid \begin{array}{ccc} 1 & 5 & \\ + & - & + \end{array}$ $(1, 5)$

ج) $x^2 + 6x + 5 \geq 0 \Rightarrow (x+1)(x+5) \geq 0$ $x \mid \begin{array}{ccc} -5 & -1 & \\ + & - & + \end{array}$ $(-\infty, -5] \cup (-1, +\infty)$

د) $x^2 - 7x + 6 \leq 0 \Rightarrow (x-1)(x-6) \leq 0$ $x \mid \begin{array}{ccc} 1 & 6 & \\ + & - & + \end{array}$ $[1, 6]$

الف) $\frac{x^2 - 3x + 2}{x-5} < 0 \Rightarrow \frac{(x-1)(x-2)}{(x-5)} < 0$ $x \mid \begin{array}{ccc} 1 & 2 & 5 \\ - & + & - & + \end{array}$ $(-\infty, 1) \cup (2, 5)$

ب) $\frac{x^2 - 1}{x^2 - 6x + 5} \geq 0 \Rightarrow \frac{(x-1)(x+1)}{(x-1)(x-5)} \geq 0$ $x \mid \begin{array}{ccc} -1 & 1 & 5 \\ + & - & - & + \end{array}$ $(-\infty, -1] \cup (5, +\infty)$

الف) $y = \sqrt{\frac{x^2 - 1}{x^3 - x}}$ $\frac{(x-1)(x^2 + x + 1)}{x(x-1)(x+1)} \geq 0 \Rightarrow \frac{x+1}{x(x+1)} \geq 0$ $x \mid \begin{array}{ccc} -1 & 0 & 1 \\ + & - & + & + \end{array}$ $(-\infty, -1) \cup (0, 1) \cup (1, +\infty)$

ب) $y = \sqrt{\frac{x^2 - 16}{x^2 - 5x + 4}}$ $\frac{(x-4)(x+4)}{(x-1)(x-4)} \geq 0$ $x \mid \begin{array}{ccc} -4 & 1 & 4 \\ + & - & + & + \end{array}$ $(-\infty, -4] \cup (1, 4) \cup (4, +\infty)$

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

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

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

ب) $y = \sqrt{3|x| - 9}$ $3|x| - 9 \geq 0 \Rightarrow 3|x| \geq 9 \Rightarrow |x| \geq 3$
 $x \leq -3$ $x \geq 3 \Rightarrow (-\infty, -3] \cup [3, +\infty)$

الف) $y = \sqrt[3]{\frac{|x|+1}{|x|-3}}$ $\Rightarrow |x|-3 \neq 0 \Rightarrow |x| \neq 3 \Rightarrow x \neq \pm 3$
 $D = \mathbb{R} - \{\pm 3\}$ (ب) ✓

ب) $y = \sqrt[3]{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$ $x \geq 0$ و $\sqrt{x}-3 \neq 0 \Rightarrow \sqrt{x} \neq 3 \Rightarrow x \neq 9$
 $[0, 9) \cup (9, +\infty)$

الف) $y = \frac{\sin x}{\cos x - 1}$ $\cos x - 1 \neq 0 \Rightarrow \cos x \neq 1 \Rightarrow x \neq 2k\pi$
 $D = \mathbb{R} - \{2k\pi\}$

ب) $y = \frac{\cos x + 1}{\sin x + 1}$ $\sin x + 1 \neq 0 \Rightarrow \sin x \neq -1 \Rightarrow x \neq \frac{3\pi}{2} + 2k\pi$ (ب) ✓

ج) $y = \frac{\tan x + 1}{\cot x - 1}$ $\cot x - 1 \neq 0 \Rightarrow \cot x \neq 1 \Rightarrow x \neq \frac{\pi}{4} + k\pi$
 $D = \mathbb{R} - \{\frac{\pi}{4} + k\pi\}$

د) $y = \frac{\sin^2 x - 3}{\sin^2 x + 1}$ $\sin^2 x + 1 \neq 0$ (ب) ✓

$y = \frac{1}{\sqrt{2|x-2| - \frac{1}{2}}}$ $\Rightarrow 2|x-2| - \frac{1}{2} > 0 \Rightarrow 2|x-2| > \frac{1}{2} \Rightarrow |x-2| > \frac{1}{4}$
 $|x-2| > \frac{1}{4} \Rightarrow x-2 > \frac{1}{4} \Rightarrow x > \frac{9}{4}$
 $|x-2| > \frac{1}{4} \Rightarrow x-2 < -\frac{1}{4} \Rightarrow x < \frac{7}{4}$
 $D = (-\infty, \frac{7}{4}) \cup (\frac{9}{4}, +\infty)$

الف) $y = \sqrt{4 - 2|x|}$ $4 - 2|x| \geq 0 \Rightarrow 2|x| \leq 4 \Rightarrow |x| \leq 2$
 $x \leq 2$ $x \geq -2 \Rightarrow D = [-2, 2]$

ب) $y = \sqrt{\frac{|x|}{|x|+1}}$ $|x|+1 \neq 0 \Rightarrow x \neq -1$
 $D = \mathbb{R} - \{-1\}$ (ب) ✓