

الف) $f(x) \rightarrow Df \in [-1, 1]$

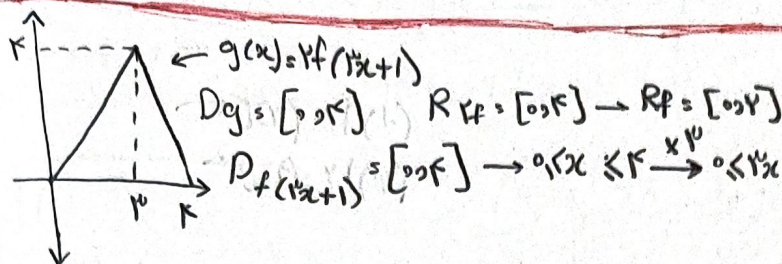
$f(1-x) \rightarrow \frac{-1}{1} \leq 1-x \leq \frac{1}{1} \rightarrow -1 \leq 1-x \leq 1 \rightarrow \boxed{\frac{-1}{1} \leq x \leq \frac{1}{1}}$

ب) $f(1-x) \rightarrow Df \in [-1, 1] \rightarrow Df \in [-1, 1]$

$f(x) = ? \rightarrow -1 \leq x \leq 1 \rightarrow -1 \leq 1-x \leq 1 \rightarrow -1 \leq 1-x \leq 1$

$f(x) = x + \sqrt{x-1} \xrightarrow{\text{تبدیل}} y = x-1 + \sqrt{(x-1)-1} \rightarrow x = y-1 + \sqrt{y-1}$

$y-1 + \sqrt{y-1} = y \rightarrow \sqrt{y-1} = 1 \rightarrow y-1 = 1 \rightarrow \boxed{y=2}$

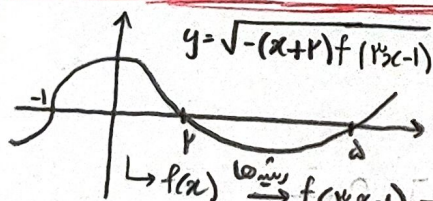
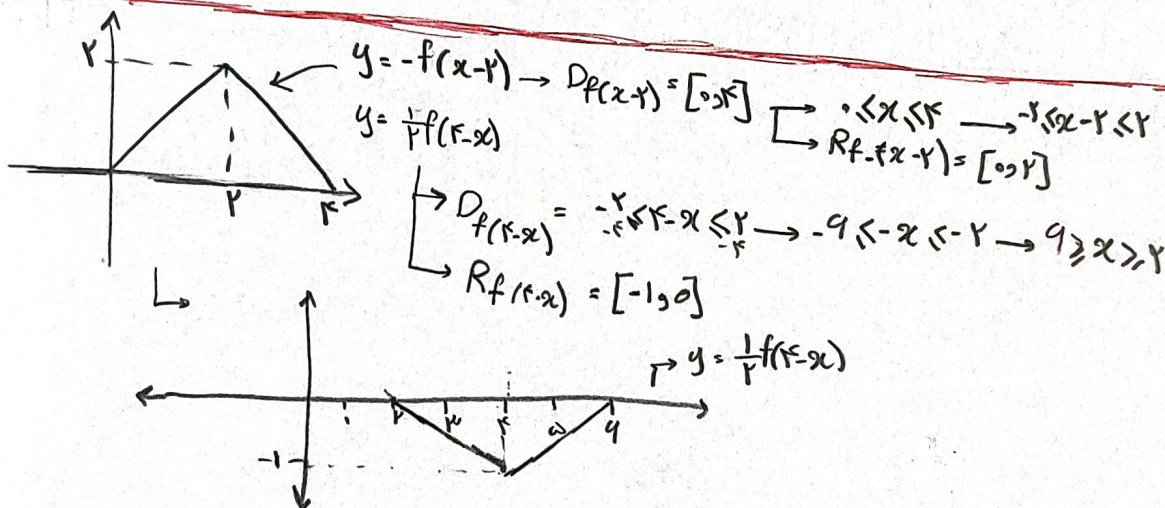


$\rightarrow \frac{1}{2}x + 1 = 2 \rightarrow \frac{1}{2}x = 1 \rightarrow x = 2$
 $\rightarrow \frac{1}{2}x + 1 = 1 \rightarrow \frac{1}{2}x = 0 \rightarrow x = 0$
 $\rightarrow \boxed{[0, 2]}$

$A(1, -1) \rightarrow y = f(x) \rightarrow f(1) = -1$

$A'(1, -1) \rightarrow y = a + \frac{1}{p} f\left(\frac{x-a}{p}\right) \rightarrow \frac{1}{p} = a \rightarrow \boxed{a=1}$

$\frac{x-a}{p} = 1 \rightarrow \frac{x-1}{1} = 1 \rightarrow x-1 = 1 \rightarrow x = 2$



$\frac{1}{2}x - 1 = -1 \rightarrow x = 0$
 $\frac{1}{2}x - 1 = 1 \rightarrow x = 4$
 $\frac{1}{2}x - 1 = 0 \rightarrow x = 2$

y	-1	0	1	2
$-(x+1)$	+	0	-	-
$f\left(\frac{1}{2}x - 1\right)$	-	-	0	+
	-	+	-	+

$\rightarrow D = [-1, 0] \cup [0, 1]$

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$$f(x) = |x-1| + 1 \xrightarrow{\text{نقطه ۱}} |x(x+k)-1| + 1 \xrightarrow{\text{نقطه ۱}} |x(x+k)-1| - 1$$

$$|x-1| + 1 = |x(x+k)-1| - 1 \rightarrow |x-1| + 1 = |x(x+k)-1| \xrightarrow{x=0} 1 = |1k-1|$$

$\left\{ \begin{array}{l} xk-1 = 1 \rightarrow k = \frac{2}{x} \\ xk-1 = -1 \rightarrow k = -\frac{2}{x} \end{array} \right.$

1

$$f(x) = \frac{x-1}{x+1} \xrightarrow{\text{نقطه ۱}} -1 = \frac{x-1}{x+1} \rightarrow y = \frac{1-x}{x+1} \xrightarrow{\text{نقطه ۱}} y = \frac{1-\frac{1}{x}}{\frac{1}{x}+1} = \frac{\frac{x-1}{x}}{\frac{x+1}{x}} = \frac{x-1}{x+1} = y \rightarrow y = \frac{x-1}{x+1}$$

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

$$\rightarrow x^2-1 = kx^2+2kx+k \rightarrow (1-k)x^2 - 2kx - (k+1) = 0 \xrightarrow{\Delta=0} 4k^2 - 4(1-k)(k+1) = 0$$

$$4k^2 - 4(k^2+1-k^2-k) = 0 \rightarrow 4k^2 - 4(2k+1) = 0 \rightarrow k^2 - 2k - 1 = 0 \rightarrow k = 1 \pm \sqrt{2}$$

