

9- سوال 2

مسئله دو از دهم جزء دفتر A

مسئله 19, 20

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

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

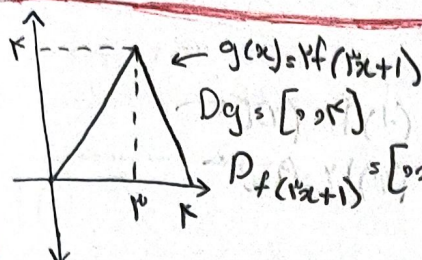
19, 20

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

$f(x) = ? \rightarrow -1 \leq x \leq 1 \rightarrow -1 \leq 1-x \leq 1 \rightarrow -1 \leq 1-x-1 \leq 1 \rightarrow \boxed{y=1}$

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

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



$Dg = [0, 1] \quad R_{1/2} = [0, 1] \rightarrow R_f = [0, 2]$

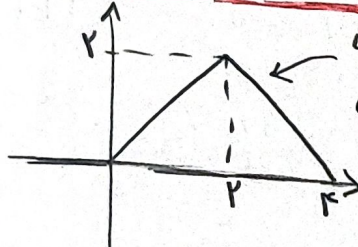
$Df(1/2 * x + 1) = [0, 1] \rightarrow 0 \leq x \leq 1 \xrightarrow{x/2} 0 \leq 1/2 * x \leq 1/2 \xrightarrow{+1} 1 \leq 1/2 * x + 1 \leq 3/2 \rightarrow \begin{cases} \text{ارتفاع} = 1 \\ \text{عرض} = 1/2 \end{cases} \rightarrow \frac{1/2 * 1}{1/2} = 1$

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

$A'(1, -1) \rightarrow y = a + 1/2 * f(x-a) \rightarrow y = a-1 \rightarrow \boxed{a=1}$

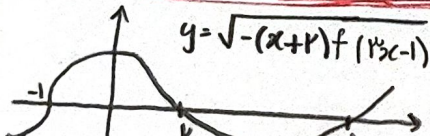
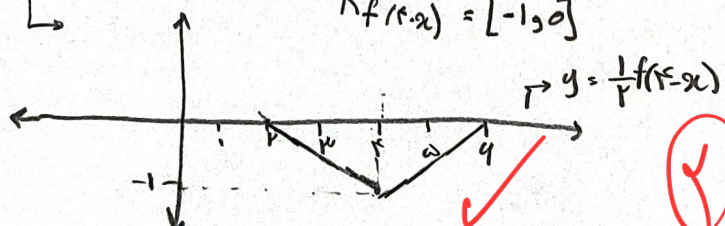
$\frac{x-a}{1} = 1 \rightarrow x-a = 1 \xrightarrow{x=1} 1-a = -1 \rightarrow \boxed{a=2}$

$a-1 = 1/2 * (a+1) - 1 \rightarrow a = -1$



$y = -f(x-1) \rightarrow Df(x-1) = [0, 1] \rightarrow \begin{cases} 0 \leq x \leq 1 \rightarrow -1 \leq x-1 \leq 0 \\ R_{f(x-1)} = [0, 1] \end{cases}$

$Df(1-x) = \frac{-1}{1} \leq 1-x \leq \frac{1}{1} \rightarrow -1 \leq 1-x \leq 1 \rightarrow 0 \leq x \leq 2 \rightarrow R_{f(1-x)} = [-1, 0]$



$f(x) \xrightarrow{\text{تبدیل}} f(1/2 * x - 1) \rightarrow \begin{cases} 1/2 * x - 1 = -1 \rightarrow x = 0 \\ 1/2 * x - 1 = 1 \rightarrow x = 4 \\ 1/2 * x - 1 = 0 \rightarrow x = 2 \end{cases}$

y	-1	0	1	2
$-(x+1)$	+	0	-	-
$f(1/2 * x - 1)$	-	-	0	+
	-	+	-	+

$\rightarrow D = [-1, 0] \cup [0, 2]$

$f(x) = |2x-3| + 1 \xrightarrow{\text{مساوی}} |2(x+k)-3| + 1 \xrightarrow{\text{مساوی}} |2(x+k)-3| - 2$ (1, 100) ✓
 $|2x-3| + 1 = |2(x+k)-3| - 2 \rightarrow |2x-3| + 3 = |2x+2k-3| \xrightarrow{x=0} 4 = |2k-3|$
 $\begin{cases} 2k-3=4 \rightarrow k=\frac{7}{2} \\ 2k-3=-4 \rightarrow k=-\frac{1}{2} \end{cases}$ عقب

$f(x) = \frac{2x-1}{x+1} \xrightarrow{\text{مساوی}} -y = \frac{2x-1}{x+1} \rightarrow y = \frac{1-2x}{x+1}$
 $\frac{1-2x}{\frac{x}{2}+1} \rightarrow \frac{2-4x}{x+2} = y \rightarrow y = \frac{2-4x}{x+2}$
 $\frac{2-4x}{x+2} + k = \frac{2x-1}{x+1} \rightarrow \frac{2x-1}{x+1} + \frac{2x-3}{x+2} = \frac{2x^2 + (4x-2x-3)x + 2x^2 - 2x - 3}{(x+1)(x+2)} = \frac{4x^2 + 2x - 9}{x^2 + 3x + 2} = k$
 $\rightarrow 4x^2 + 2x - 9 = kx^2 + kx + 2k \rightarrow (4-k)x^2 + (2-k)x - 9 - 2k = 0$
 $14 + 14k^2 - 32k - 24k + 99 - 12k^2 + 24k = 0 \rightarrow 2k^2 - 11k + 11 = 0 \rightarrow k^2 - 2k + 11 = 0 \rightarrow k^2 - 2k + 11 = 0$
 $k=4 \leftarrow$ عبارت درجه 1 باشد یک به خود را می دهد عبارت درجه 2 می باشد

