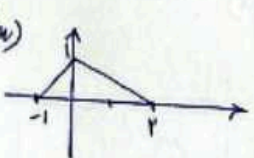
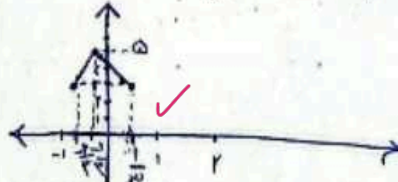
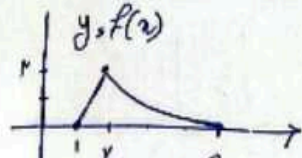
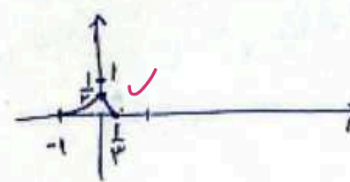


۱۷, ۲۵

نام و نام خانوادگی: ... پاسخنامه تشریحی تکلیف شماره ... کلاس: ...	$f(x) \rightarrow D_{f(x)} = [-1, 4]$ $f\left(\frac{x+1}{5}\right) \xrightarrow{0} -1 \leq \frac{x+1}{5} \leq 4 \rightarrow -1 \leq x+1 \leq 20$ (۲) $\rightarrow -11 \leq x \leq 19 \rightarrow -1 \leq x \leq 4$ $D_{f\left(\frac{x+1}{5}\right)} = [-1, 4]$ ✓	۱
$f(3x-1) \rightarrow D = [-1, 4] \xrightarrow{-1} f(3(-1)-1) = f(-4)$ $\xrightarrow{4} f(3(4)-1) = f(11)$ $D_{f(x)} = [-1, 4]$ ✓	(۲)	۲
$f\left(\frac{x+1}{4}\right) \rightarrow D = [-1, 4] \xrightarrow{-1} f\left(\frac{(-1)+1}{4}\right) = f(0)$ $\xrightarrow{4} f\left(\frac{(4)+1}{4}\right) = f(1)$ $D_{f(x)} = [-1, 4]$ ✓	(۲)	۳
$f(1-2x) \rightarrow D_{f(1-2x)} : -1 \leq 1-2x \leq 4 \rightarrow -1 \leq -2x \leq 3 \rightarrow$ $\frac{1}{2} \geq x \geq -\frac{3}{2} \Rightarrow D_{f(1-2x)} = \left(-\frac{3}{2}, \frac{1}{2}\right]$ ✓	(۲)	۴
$y = f(x)$ 	$y = 2f\left(\frac{x+1}{4}\right) + 3$ $-1 \leq \frac{x+1}{4} \leq 1$: با توجه $\frac{1}{4} \leq x \leq \frac{3}{4}$ $x+1=0 \Rightarrow x=-1$ ✓ 	(۲)
$y = f(x)$ 	$y = \frac{1}{2}f(1-x)$ $-1 \leq 1-x \leq 4 \Rightarrow -1 \leq -x \leq 3 \Rightarrow -3 \leq x \leq 1$ (۲) $1-x=1 \Rightarrow x=0$ عرض نصف می شود ✓ 	(۲)

$$y = \frac{1}{4}x^2 + \frac{1}{2}x + 1$$

$$\frac{b}{a} = \frac{\frac{1}{4}}{\frac{1}{4}} = \frac{1}{1} = 1$$

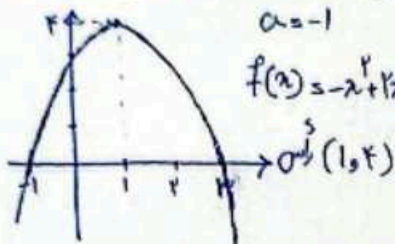
$$y = \frac{1}{4}x^2 + \frac{1}{2}x + 1 = \frac{1}{4}(x^2 + 2x + 4)$$

صفحه آخر

$$f(x) = a(x-1)^2 + k \rightarrow f(1) = ka + k = 0$$

$$a = -1$$

$$f(x) = -x^2 + 2x + 1$$



$$y = 1 - 2f(x+1)$$

$$2x+1=1 \rightarrow x=0$$

$$y = 1 - 2f(0) = -1$$

$$D_f(x, y) = (-1, -1)$$

$$x, y = -1, -1 \rightarrow y = -1$$

$$y = f(x-1) + g(x+1) \quad D_f = (a, b) \quad D_g = (-1, b)$$

$$f(x-1) \rightarrow a < x-1 \leq b \rightarrow a+1 < x \leq b+1$$

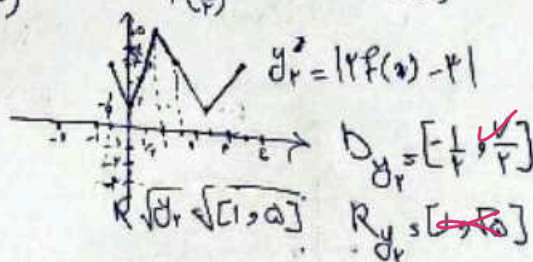
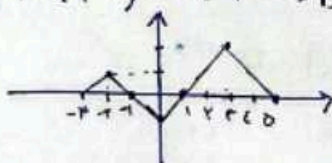
$$g(x+1) \rightarrow -1 \leq x+1 < b \rightarrow -2 \leq x < b-1$$

$$a+1 = -2 \rightarrow a = -3$$

$$b-1 = b \rightarrow b = 1$$

$$a-b = -3-1 = -4$$

$$y_1 = f\left(\frac{x+1}{2}\right) = f\left(\frac{x+1}{2}\right) \Rightarrow D_f: [-1, 0] \rightarrow D_g: [-1, 1] \rightarrow D_h: \left[\frac{1}{2}, \frac{3}{2}\right]$$



$$y_2 = |2f(x) - 1|$$

$$D_{y_2} = \left[-\frac{1}{2}, \frac{3}{2}\right]$$

$$R_{y_2} = [0, 1]$$

صفحه آخر

$$f(x) = \left| \frac{x+1}{2} \right| \xrightarrow{\text{مشتق}} f' = \frac{|x-1|}{2} = \left| \frac{x-1}{2} \right| \xrightarrow{\text{مشتق}} g(x) = \left| \frac{x-1}{2} \right| + 1$$

$$x + \left| \frac{x-1}{2} \right| + 1 < 0$$

$$\begin{aligned} x+1, \frac{x-1}{2} < 0 & \rightarrow \frac{x-1}{2} < -x-1 \rightarrow x-1 < -2x-2 \rightarrow 3x < -1 \rightarrow x < -\frac{1}{3} \\ \frac{x-1}{2} < 0 & \rightarrow \frac{x-1}{2} < x+1 \rightarrow x-1 < 2x+2 \rightarrow -x < 3 \rightarrow x > -3 \end{aligned}$$

صفحه آخر

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رأس: $(h, k) \xrightarrow{\text{معادله خط}} y = a(n-h)^2 + k = -\frac{1}{3}n^2 + \frac{2}{5}n + 1 \rightarrow a = -\frac{1}{3}$

رأس: $(4, 3) \rightarrow y = -\frac{1}{3}(n-4)^2 + 3 \xrightarrow{y=0} -\frac{1}{3}(n-4)^2 = -3 \rightarrow \begin{cases} n=7 \\ n=1 \end{cases}$

-9

$D_{y_1} = [-3, 5] \rightarrow -3 \leq n \leq 5 \rightarrow -\frac{1}{3} \leq \frac{n}{3} + 1 \leq \frac{5}{3} \Rightarrow D_f = [-\frac{1}{3}, \frac{5}{3}]$

$R_{y_1} = [-1, 2] \rightarrow -1 \leq f \leq 2 \rightarrow -5 \leq 2f - 3 \leq 1 \rightarrow 0 \leq |2f - 3| \leq 5$

$0 \leq \sqrt{|2f - 3|} \leq \sqrt{5} \Rightarrow R_f = [0, \sqrt{5}]$

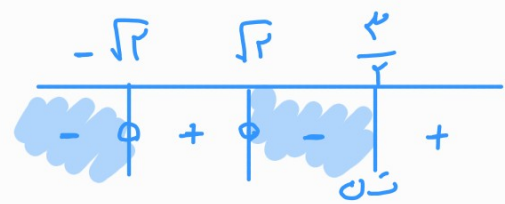
-10

$g(n) = \left| \frac{(n-2)+1}{2(n-2)+1} \right| + 1 = \left| \frac{n-1}{2n-3} \right| + 1$

$n + g(n) < 0 \rightarrow \left| \frac{n-1}{2n-3} \right| < -1 - n$

از به قدر مطلق بزرگتر شود پس باید مثبت باشد: $-1 - n > 0 \rightarrow n < -1$

$\xrightarrow{\text{قدر مطلق مثبت}} \frac{n-1}{2n-3} < -1 - n \rightarrow \frac{2n^2 - 4}{2n-3} < 0 \rightarrow \frac{2(n-\sqrt{2})(n+\sqrt{2})}{2n-3} < 0$



$\xrightarrow{n < -1} n < -\sqrt{2} \rightarrow (-\infty, -\sqrt{2})$