نام و نام خانوادگی: عرفان عبداللهی   پاسخنامه تشریحی تکلیف شماره ۷ کلاس دوازدهم تجربی A

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$$y = -\frac{1}{3}x^2 + \frac{2}{5}x + 1 = -\frac{1}{3}\left(x - \frac{3}{5}\right)^2 + \frac{28}{25}$$

$x_s = +\frac{3}{5}$

$y_s = \frac{28}{25}$ $\longrightarrow$ رأس جدید $\rightarrow (4,3) \rightarrow y = -\frac{1}{3}(x-4)^2 + 3$

معادلهٔ تابع جدید به وسیلهٔ مختصات رأس جدید

$-\frac{1}{3}(x-4)^2 + 3 = 0 \longrightarrow (x-4)^2 = 9 \rightarrow x-4=-3 \rightarrow x=1$

$x-4=3 \rightarrow x=7$

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$f(x) \xrightarrow[f(x)]{} A'(1,4) \rightarrow f(1)=4$

رأس سهمی

$y = 1 - 2f(3x+2) \rightarrow A(\alpha,\beta)$ $\qquad \alpha\cdot\beta = -7 \times \left(-\frac{1}{3}\right) = \frac{7}{3}$

رأس سهمی y

$\frac{1-y}{2} = 4 \rightarrow y=-7 \rightarrow \beta=-7$

$2f(3x+2) = 1-y$

$f(3x+2) = \frac{1-y}{2} \longrightarrow 3x+2=1 \rightarrow 3x=-1 \rightarrow x=-\frac{1}{3} \longrightarrow \alpha = -\frac{1}{3}$

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$3-\sqrt{2x} \longrightarrow 3-\sqrt{2x+2} \longrightarrow -3+\sqrt{2x+2} \rightarrow 2+\sqrt{2x+2}$

$g(x) = 2+\sqrt{2x+2} \longrightarrow 2+\sqrt{2x+2} = \frac{7}{2}$

$\sqrt{2x+2} = \frac{3}{2}$

$2x+2 = \frac{9}{4} \rightarrow 2x = \frac{1}{4} \rightarrow x = \frac{1}{8}$

$\underline{x = \frac{1}{8}}$

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$y = f(x-1) + g(x+1)$ $\qquad D_g = [-1, b)\ ,\ D_f = (a, 4]$

$a < x-1 \leq 4 \qquad -1 \leq x+1 < b$

$a+1 < x \leq 5 \qquad -2 \leq x < b-1$

$(a+1, 5] \cap [-2, b-1) = (-2, 5) \longrightarrow a+1=-2 \rightarrow a=-3$

$b-1=5 \rightarrow b=6$

$a-b=-9$

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$y_2 = \sqrt{|2f(x)-3|} \rightarrow |2f(x)-3| \geq 0 \ ,\ D_{y_1} = [-3, 5]$

$-3 \leq x \leq 5 \rightarrow -\frac{3}{2} \leq \frac{x}{2} \leq \frac{5}{2} \rightarrow -\frac{1}{2} \leq \frac{x}{2}+1 \leq \frac{7}{2} \rightarrow f(x) \rightarrow -\frac{1}{2} \leq x \leq \frac{7}{2}$

$-1 \leq f\left(\frac{x}{2}+1\right) \leq 2 \longrightarrow -1 \leq f(x) \leq 2 \rightarrow -5 \leq 2f(x)-3 \leq 1 \rightarrow 0 \leq |2f(x)-3| \leq 5$

$y_2 = \sqrt{|2f(x)-3|} \rightarrow R_{y_2} = [0, \sqrt{5}] \ ,\ D_{y_2} = \left[-\frac{1}{2}, \frac{7}{2}\right]$

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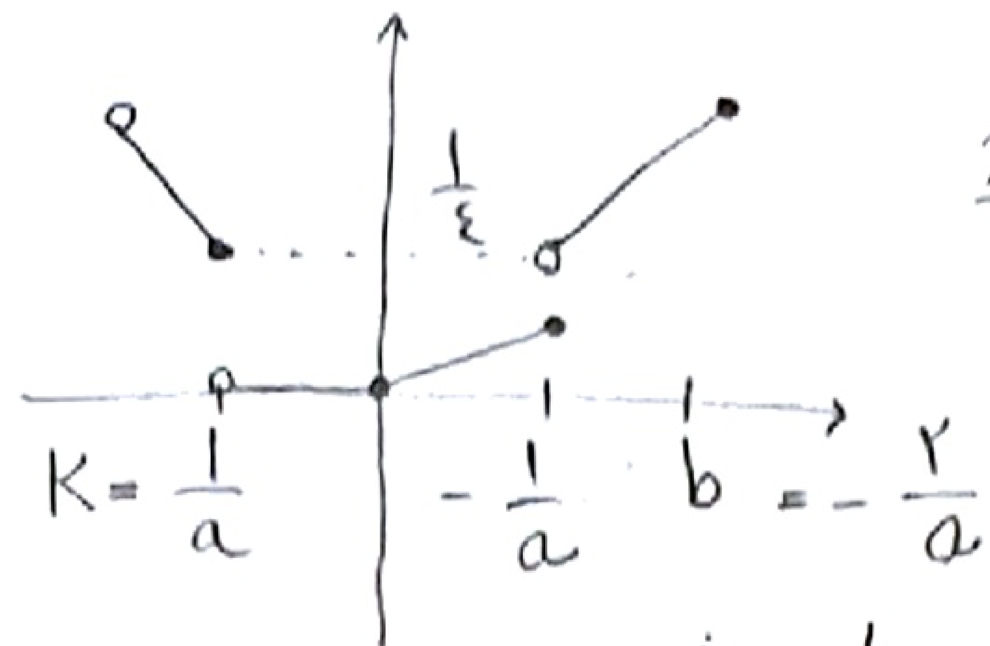

$\frac{x}{a}[ax] \to [ax]=0 \to 0\le ax<1 \xrightarrow{\div a,\ a<0} 0\ge x>\frac{1}{a} \to K<x\le 0$, $K=\frac{1}{a}$

$\frac{K}{a}[aK]=\frac{1}{4} \xrightarrow{K=\frac{1}{a}} \frac{1}{a^2}\times[1]=\frac{1}{4} \to a=\pm 2 \to a=-2$, $b=-\frac{2}{-2}=+1$

$b-a=1-(-2)=3$

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$\log_2 x \to \log_2 (x+2) \to -\log_2 (x+2) \to -\log_2 (x+2)+3 \to -\log_2 (-x+2)+3$

$g(x)=-\log_2 (2-x)+3$

$g(-14)=-\log_2 (14+2)+3=-(4)+3=-1$

$g(-62)=-\log_2 (62+2)+3=-(6)+3=-3$

$g(-14)+g(-62)=-3-1=-4$

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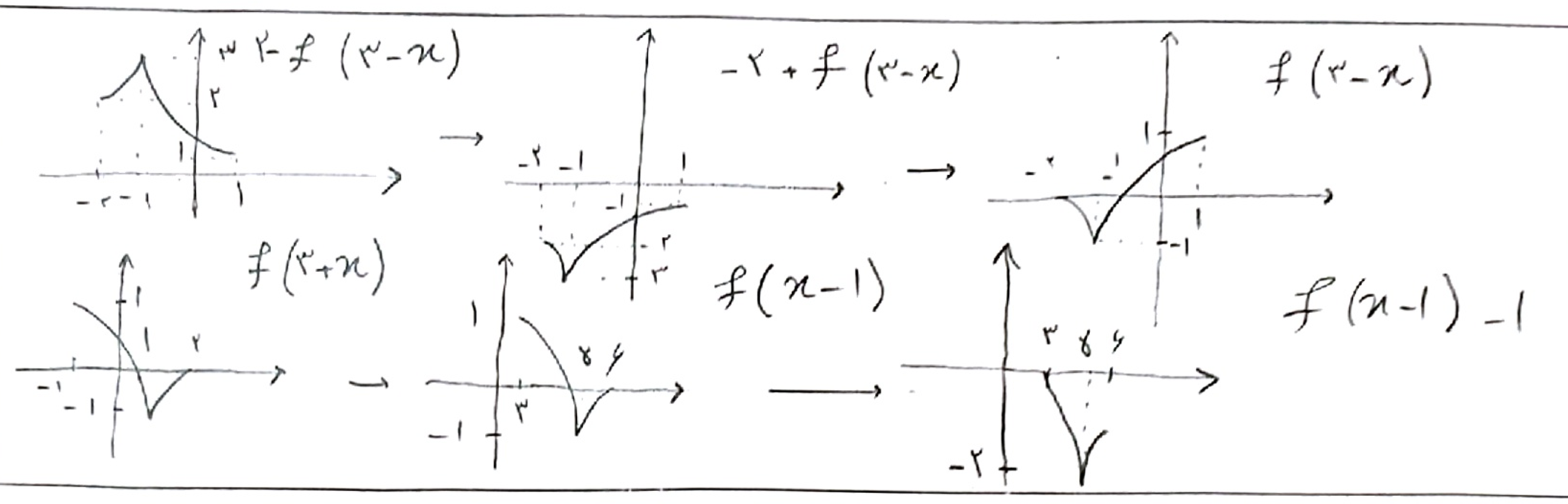

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$g(x)=\left|\frac{(x-2)+1}{2(x-2)+1}\right|+1 \to \left|\frac{x-1}{2x-3}\right|+1$ $* \ -\sqrt{2}<x<-1$

$\left|\frac{x-1}{2x-3}\right|+x+1<0 \to \left|\frac{x-1}{2x-3}\right|<-(x+1)$, $\left|\frac{x-1}{2x-3}\right|\ge 0 \to -(x+1)>0$

$x+1<0 \to x<-1$, $\left|\frac{x-1}{2x-3}\right|$ $\begin{array}{ccccc} & 1 & & \frac{3}{2} & \\ + & | & - & | & + \end{array} \xrightarrow{x<-1} \frac{x-1}{2x-3}$ قدر مطلق مثبت است

$\frac{x-1}{2x-3}<-(x+1) \to x-1<-(x+1)(2x-3) \to x^2<2 \to -\sqrt{2}<x<\sqrt{2},\ x<-1$ $*$

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$f(x)=K(x-2)^3+27 \to (0,0) \to f(0)=K(-2)^3+27=0 \to 8K=27$, $K=\frac{27}{8}$

$g(x)=\sqrt{28f(x)-f^2(x)} \to 28f(x)-f^2(x)\ge 0 \to f(x)(28-f(x))\ge 0$

$0\le f(x)\le 28 \to 0\le x\le \frac{8}{3}$ $D_{g(x)}=[0,\frac{8}{3}] \to \{0,1,2\} \to$ سه عدد صحیح

$f(x)=0 \to x=0$ $f(x)=28 \to 28=\frac{27}{8}(x-2)^3+27 \to 1=\frac{27}{8}(x-2)^3$

$1=\frac{3}{2}(x-2) \to \frac{2}{3}+2=x \to x=\frac{8}{3}$