DATE: SUB:

ریاضی زنشی (?) ۱۶,۷۵

۱-

$y = -\frac{1}{3}x^2 + \frac{3}{5} + 1$

$\frac{-b}{2a} = \frac{3}{5} \longrightarrow y = \frac{28}{25} \longrightarrow (4-\frac{3}{5}, 3-\frac{28}{25})$

$(h, k) = (\frac{17}{5}, \frac{47}{25}) \to y_{new} = -\frac{1}{3}x^2 + \frac{8}{3}x - \frac{7}{3} \to$

$\underline{x = 1, 7}$ ✓ ۲

$y = 1 - 2f(3x+2) \to 3x + 2 = 1 \to x = -\frac{1}{3}$, $y = 1 - 2f(1) = -7 - 2$

$A(-\frac{1}{3}, -7) \to \alpha\beta = \frac{7}{3}$ ✓ ۲

۳-

$y = 3 - \sqrt{2x} \longrightarrow 3 - \sqrt{2(x+1)} \longrightarrow y = -(3 - \sqrt{2(x+1)})$

$y = -3 + \sqrt{2(x+1)} \xrightarrow{+5} y = \sqrt{2(x+1)} + 2 \to y = \sqrt{2x+2} + 2 \longrightarrow$ ۲

$\sqrt{2x+2} + 2 = \frac{7}{2} \to \sqrt{2(x+1)} = \frac{3}{2} \to 2x = \frac{1}{4} \to x = \frac{1}{8}$ ✓

۴-

$x+1 \in D_f$, $x-1 \in D_g$

$\{x \mid x-1 \in (a, 4]\}$, $\{x \mid x+1 \in [-1, b)\}$

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

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

$\underline{a - b = -9}$ ✓ ۲

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۵ ـ همواره برقرار است لذا دامنه تابع IR است و $|2f(x)-3| \geq 0 \rightarrow$

دامنه y_2 برابر با دامنه تابع $f(x)$ است $= [-\frac{1}{2}, \frac{7}{2}]$ ۱,۷۵

$-1 \leq f(x) \leq 2 \rightarrow -2 \leq 2f(x) \leq 4 \rightarrow -5 \leq 2f(x)-3 \leq 1 \rightarrow$

$\rightarrow 1 \leq |2f(x)-3| \leq 5 \rightarrow 1 \leq \sqrt{|2f(x)-3|} \leq \sqrt{5}$

$R_{y_2} = [0, \sqrt{5}]$ $R_{y_2} = [1, \sqrt{5}]$

۶ ـ ۰

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۷ ـ $f(x) = \log_2^x \longrightarrow \log_2^{(x+2)} \rightarrow -\log_2^{(x+2)} \rightarrow -\log_2^{(x+2)} + 3 \rightarrow$

$\rightarrow -\log_2^{((-x)+2)+3} \Rightarrow g(x) = 3 - \log_2^{2-x}$ ۲

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

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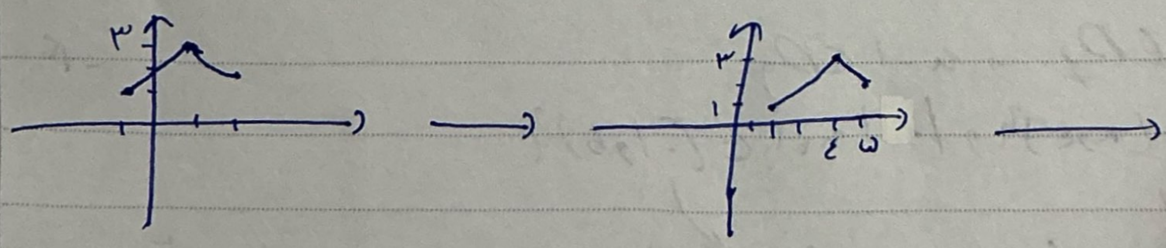
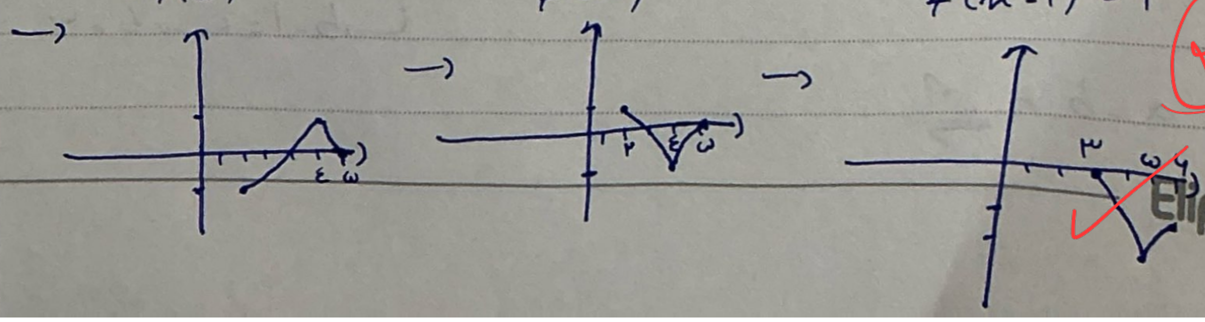
۸ ـ $2 - f(x+3)$ $2 - f(x)$



$-f(x)$ $f(x)$ $f(x-1) - 1$



۲

DATE: SUB:

$f(x)=\left|\frac{x+1}{2x+1}\right| \to g(x)=\left|\frac{(x-2)+1}{2(x-2)+1}\right|+1=\left|\frac{x-1}{2x-3}\right|+1$ -۹

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

$x+1<0 \xrightarrow{\text{درنتیجه}} x<-1: \; x+1+\frac{x-1}{2x-3}<0 \to (x+1)(2x-3)+(x-1))0$

$\to (x+1)(2x-3)=2x^2-x-3 \to 2x^2-x-3+x-1=2x^2-4 \to$

$\to 2x^2-4>0 \to x^2>2 \to |x|>\sqrt{2}$ (2), $x<-1$ (1)

$(1)\cap(2) \to (-\infty,-\sqrt{2})$ ۲

$g(x)=\sqrt{28f(x)-f^2(x)} \to 28f(x)-f^2(x)\geq 0$ - ۱۰

$f(x)(28-f(x))\geq 0 \to f(x)\geq 0,\; 28-f(x)\geq 0 \to 0\leq f(x)\leq 28$ ۱

~~فرض~~ $f(x)=(x-2)^3+27 \to 0\leq (x-2)^3+27\leq 28$

$(x-2)^3+27\geq 0 \to (x-2)^3\geq -27 \to x\geq -1$

$(x-2)^3+28\leq 28 \to (x-2)^3\leq 1 \to x\leq 3$

$-1\leq x\leq 3 \to$ حاصل ۵ عدد صحیح

$f(x)=\frac{27}{8}(x-2)^3+27 \to D_f=[0, 8/3] \to$ ۳ عدد صحیح

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