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نیا سیفی زندی   تکلیف شماره ۵   دوازدهم ریاضی A

(۱)

$f(x)=ax+b \qquad f(2x+1)+f(x+2)=3x+f(3)$

$a(2x+1)+b+a(x+2)+b=3x+(3a+b) \rightarrow$

$(2a+a)x+(a+2a)+(b+b)=3x+3a+b$

$3ax+3a+2b=3x+3a+b \qquad 3a+2b=3a+b$

$b=0 \qquad a=1 \qquad f(x)=x$

$y=\sqrt{f(x)-x^2}=\sqrt{x-x^2} \qquad -\frac{b}{2a}=\frac{1}{2}$

$y_{max} \rightarrow R_f=\sqrt{(-\infty,\frac{1}{4}]}=\sqrt{[0,\frac{1}{4}]}$

(۲)

$f(x)=\frac{x^3-4x}{x+2} \qquad D_f=R-\{a,b\} \qquad R_f=[c,+\infty)-\{8\}$

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

$x^2-2x \qquad x_{min}=-\frac{b}{2a}=1 \qquad y_{min}=-1$

$R_f=[-1,+\infty) \qquad c=-1 \qquad x^2-2x=8$

$(x-4)(x+2)=0 \qquad x=4,-2 \qquad D_f=R-\{-2,4\}$

$f(-1)=\frac{-1^3-4(-1)}{-1+2}=3$

(۳)

$y=\sqrt[3]{x^3+ax^2+bx-8} \qquad y=\sqrt[3]{(x-2)^3}$

$y=x-2 \qquad a=-6 \qquad b=12 \qquad D_f=[-6,12]$

$R_f=[-8,10]$

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$y = \left(\frac{x+1}{1-x}\right)^{\frac{1}{5}}$ $y = \sqrt[5]{\frac{x+1}{1-x}}$

$D_f = (-\infty, 1) \cup (1, +\infty)$ $R_f = (-\infty, -\frac{1}{b}) \cup (a, +\infty)$

$b = -1$ $a = 1$ $a + b = 0$

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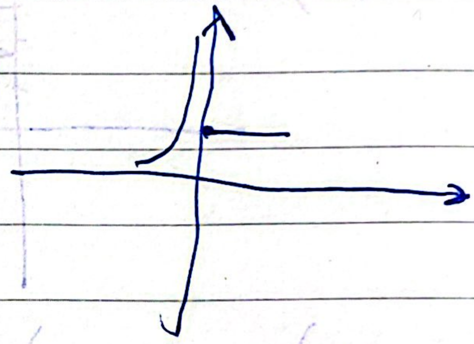
$-1 \leq x < 0$ $\frac{-1}{x}$

$0 \leq x < 1 \rightarrow$ غ ق ق

$0 < x \leq 1 \rightarrow [x] = 0$ $f(x) = 1$



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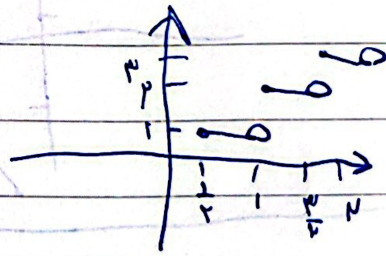
$\frac{1}{2} \leq x < 1$ $[x] = 0 \rightarrow 1$

$1 \leq x < \frac{3}{2}$ $[x] = 1 \rightarrow 2$

$\frac{3}{2} \leq x < 2$ $[x] = 1 \rightarrow 3$

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$(x+1)^2 < (ax+3)^2$ $(x+1)^2 - (ax+3)^2 < 0$

$x_1 = \frac{2}{1-a}$ $x_2 = -\frac{4}{1+a}$ $a = -1$ غ ق ق $a = 1$

$b = -2$

$a - b = \boxed{3}$

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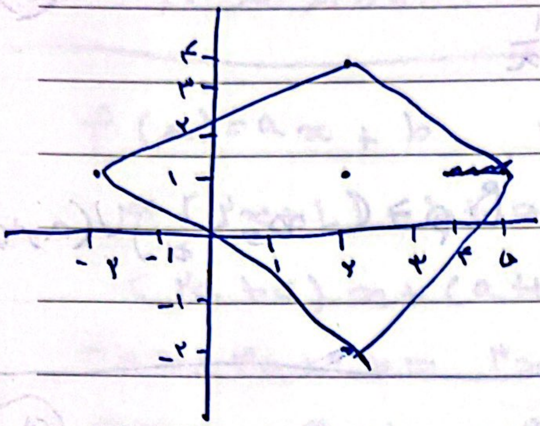

از شکل (۱و۲) ۳ تا به اینطرف تر
دو روی هم درست کردیم

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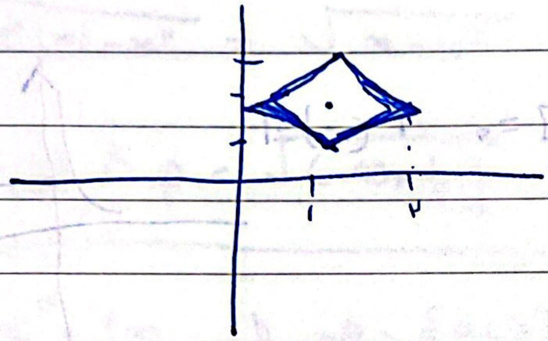
الف)



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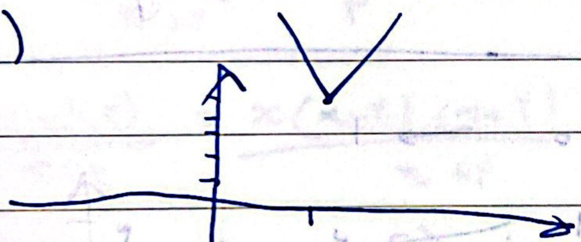

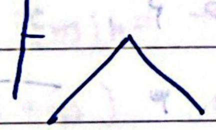

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۳ + a > ۰     a > -۳     ۳ - a > ۰     a < ۳

$\boxed{|a| < ۳}$

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