Subject

Date : Year: Month: Day: یازدهم تجربی — تکلیف ۷ — محمد مختاری

(۱)

$f(x) = \sqrt{1-x^۲}$ $\quad g = \{(-۱,۱), (۰,۴), (۲,۰), (۱,۲)\}$

$D_f = \sqrt{(1-x)(1+x)}$ $\quad \begin{matrix} -۱ & & +۱ \\ - & + & - \end{matrix}$ $\quad D_f = [-۱, ۱]$ مجموع اعضای $(۲g - ۳f)$

$۳f(x) = \{(-۱,۰), (۰,۳), (۱,۰)\}$ $\quad ۲g = \{(-۱,۲), (۰,۸), (۲,۰), (۱,۴)\}$

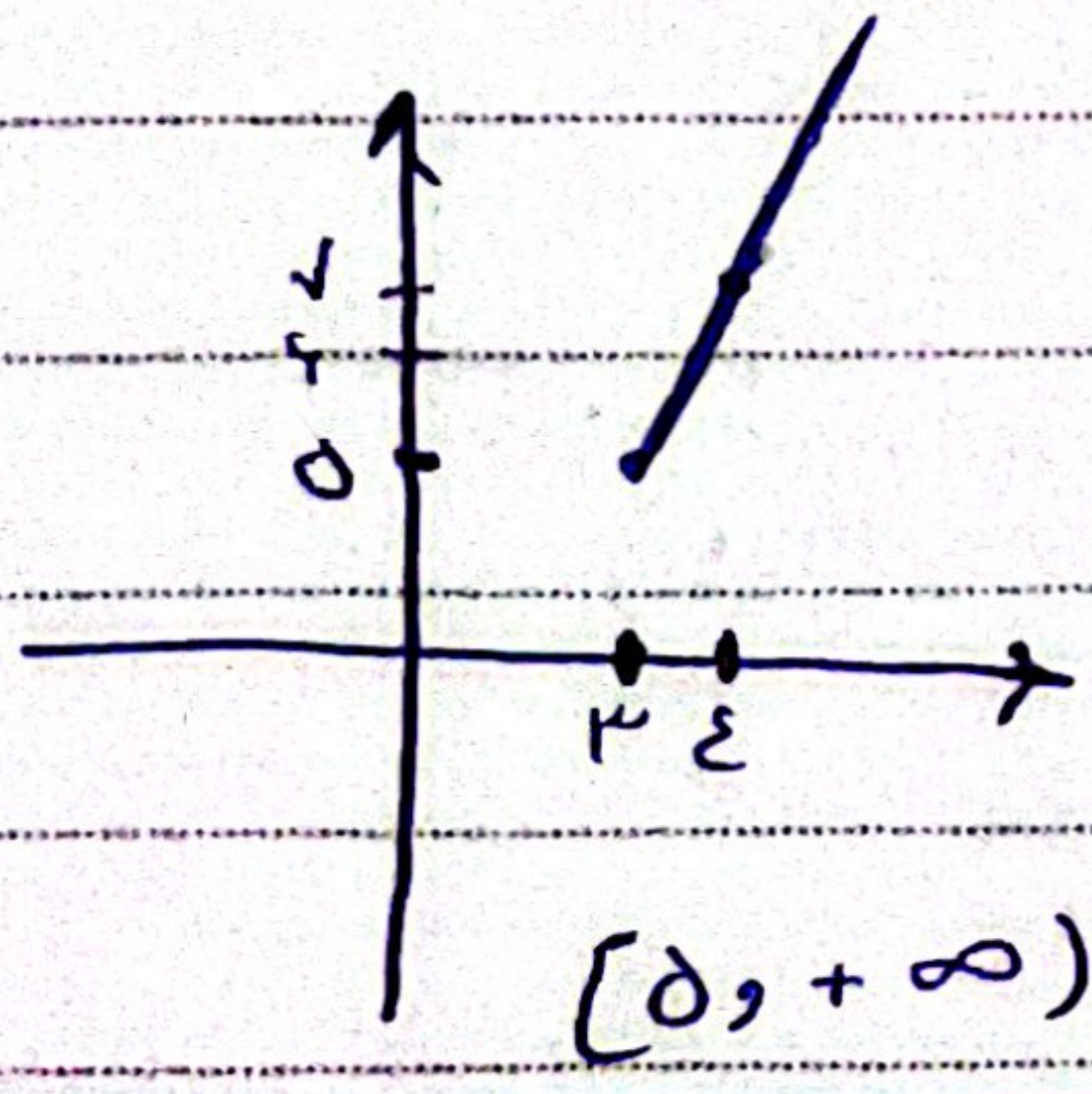
$۲g - ۳f = \{(-۱,۲), (۰,۵), (۱,۴)\} \rightarrow ۲+۵+۴ = ۱۱$

(۲)

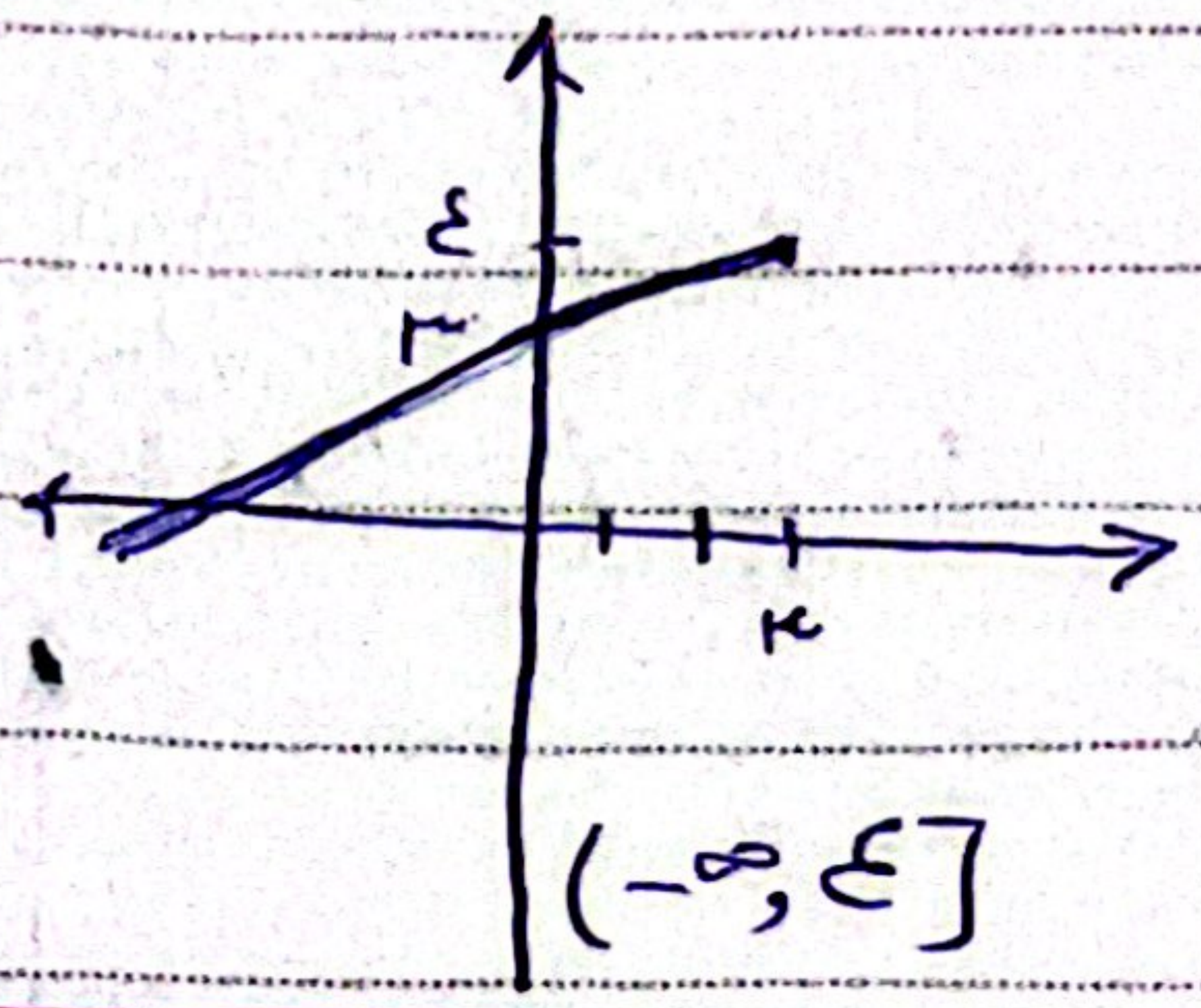
$f(x) = ۲x - ۱$ $\quad D_f = [۳, +\infty)$

$g(x) = \frac{۱}{۲}x + ۳$ $\quad D_g = (-۵, ۲]$

$R_f \cup R_g = ?$ $\quad (-\infty, ۴] \cup [۵, +\infty)$



$[۵, +\infty)$



$(-\infty, ۴]$

(۳)

$y = -\frac{x^۲}{۲} + x + ۳$ $\quad R_y \xrightarrow{\text{درباره}} (a, b) \rightarrow (\frac{۳}{۲}, +\infty)$

$-\frac{x^۲}{۲} + x + ۳ > \frac{۳}{۲} \rightarrow -x^۲ + ۲x + ۶ > ۳$

$\max \sqrt{b-a}$ $\quad \sqrt{۳-(-۱)} = ۲$ $\quad -(x^۲ - ۲x - ۳) > ۰$

$(-۱, ۳) \rightarrow$ $\frac{۳}{۲}$ بزرگتر $\quad \begin{matrix} & -۱ & & ۳ & \\ - & ۰ & + & ۰ & - \end{matrix}$ $\quad -(x-۳)(x+۱) > ۰$

$a = -۱ \quad b = ۳$

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(٤)

$\min y = ?$ $\qquad y = |x-1| + |x-3| + |x-4|$

Number line: ۱ | ۳ | ۴

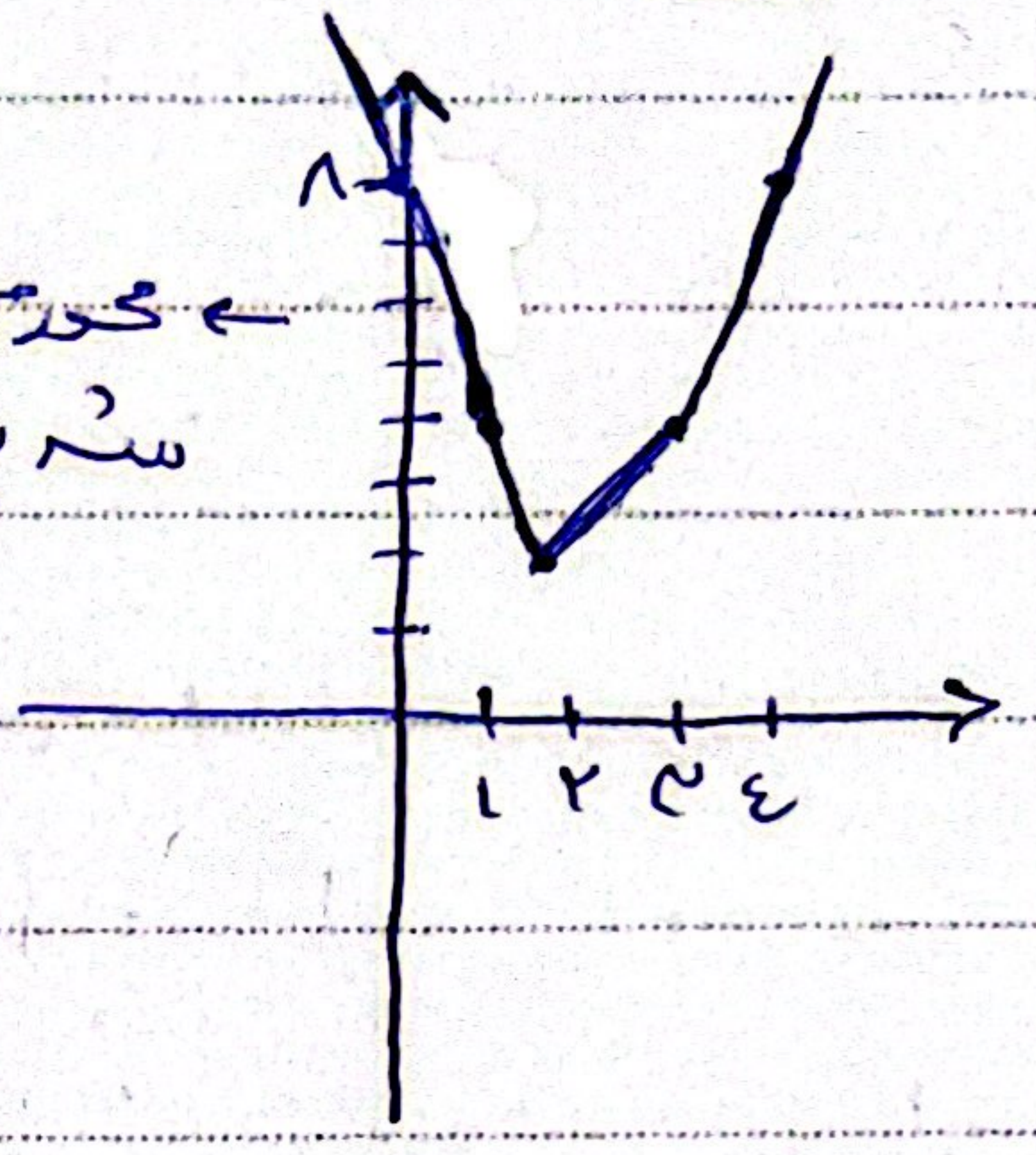
$-4x+8$ | $-2x+6$ | $2x-2$ | $4x-8$

(٤) (۲) (٤)

$\min y \to 2$

x	۰	۱	۲	۳	٤
y	۸	٤	۲	٤	۸

محورم زشت شد ببخشید ♡!



(۵)

$R_y \qquad y = |x| - 2|x+1|$

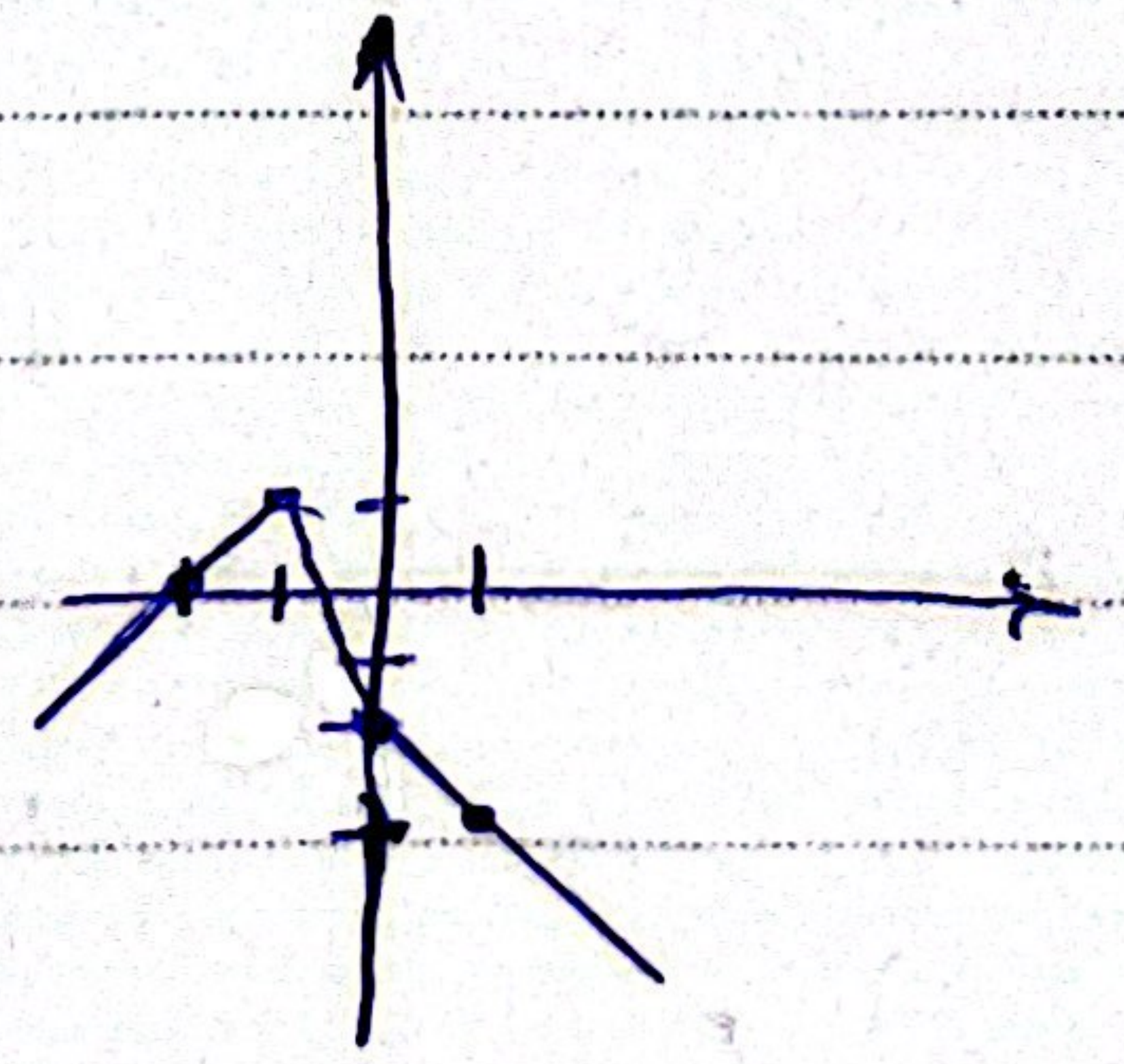
Number line: -1 | 0

$+x+2$ | $-3x-2$ | $-x-2$

(1) (−۲)

$R_y = (-\infty, 1]$

x	y
−۲	۰
۰	−۲
−۱	۱
۱	−۳



(۶)

مقادیر طبیعی $m \qquad y = \dfrac{x^2+5x+m}{x+1} \to \mathbb{R} = y$ برد

$x^2 + (5-y)x + m - y = 0$

$x = \dfrac{y - 5 \pm \sqrt{(5-y)^2 - 4m + 4y}}{4} = y^2 - 10y + 25 - 4m + 4y \geq 0$

$y^2 - 6y + 25 - 4m \geq 0$

$y^2 - 6y + 25 - 4m \xrightarrow{\Delta \leq 0} 36 - 4(25 - 4m) \leq 0$

$\hookrightarrow 36 - 100 + 16m \leq 0$

$16m \leq 64 \qquad m \leq 4$

$\dfrac{x^2+5x+4}{x+1} \to \dfrac{(x+1)(x+4)}{(x+1)} \to$ شرط $\to m \neq 4$

$x \neq -1$

$m = \{1, 2, 3\}$

جواب

parsian

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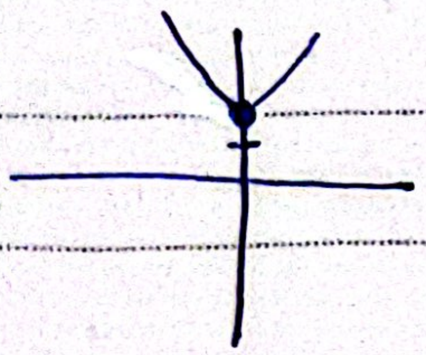
$R_f = ?$ (۷)

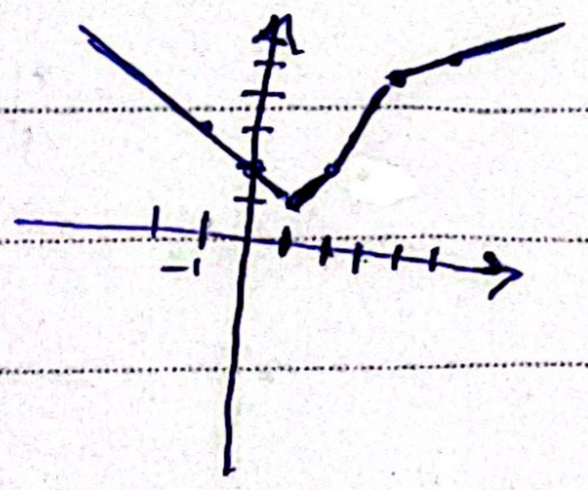
$$f(x) = \begin{cases} x+2 & , x \geq 2 \\ x^2 - 2x + 2 & , 0 \leq x < 2 \\ |x| + 2 & , x < 0 \end{cases}$$

$R_1 = [0, +\infty)$

$g = (x-1)^2 + 1 \Rightarrow S|_1^1$



$R_{g_2} = [2, +\infty)$

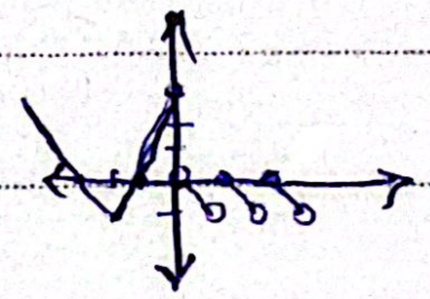


(۱)

$R_f = ?$

$$f(x) = \begin{cases} x^2 + 4x + 2 & x \leq 0 \\ [2x] - 2x & x > 0 \end{cases}$$

$S|_{-1}^{-2}$



$R_1 = [-1, +\infty)$

$R_2 = (-1, 0]$ $R_1 \cup R_2 = [-1, +\infty)$

(۹)

$g = a + 1 - \sqrt{2x+2}$

$D_f = 2x + 2 \geq 0 \rightarrow x \geq -\frac{2}{2} \rightarrow b \geq -\frac{2}{2}$

$D_g = [b, +\infty)$

$R_f \rightarrow y_{min} \rightarrow \sqrt{2x+2} = 0 \rightarrow x = -\frac{2}{2}$

$R_g = (-\infty, a]$

$g = a + 1 - 0 \rightarrow a = 4$

$ab = ? \quad -\frac{2}{2} \times 4 = -4$

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$f(x) = 2\sqrt{x+1} + \sqrt{1-x}$ $\quad x+1 \geq 0 \to x \geq -1$ $\quad R_g = [1, 2\sqrt{2}]$, $x \in [-1, 1]$ (1)

$f(x) + g(x) = \sqrt[3]{2 + 2\sqrt{1-x^2}}$ $\quad 1-x \geq 0 \to x \leq 1$

$D_f = D_g$

$f(1) = 2\sqrt{2}$ $\quad f(-1) = \sqrt{2}$ $\quad f(0) = 2$

$R_y = ?$ $\quad y = \frac{f(x)}{2} - \frac{g(x)}{3}$ $\quad f(1) + g(1) = \sqrt[3]{2 + 2\sqrt{1-1}} \to g(1) = \sqrt[3]{2}\sqrt{2} - \sqrt{2} = \pm\sqrt{2}$

$f(-1) + g(-1) = \sqrt[3]{2 + 2\sqrt{1-(-1)^2}} = g(-1) =$

$\sqrt[3]{2}\sqrt{2} - \sqrt{2} = -\sqrt{2}$

$g(1) = \frac{2\sqrt{2}}{2} - \frac{\sqrt{2}}{3} = 1$

$g(-1) = \frac{\sqrt{2}}{2} - \frac{-\sqrt{2}}{3} = \frac{4\sqrt{2}}{6} < \sqrt{2}$

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