

الف) $f(x) = 2 \sin^2(x + \frac{\pi}{3}) - 1$

max $2 - 1 = 1$
min $0 - 1 = -1$
 $-\frac{b}{a}$

$\rightarrow R_{f(x)} = [-1, 1]$

ب) $g(x) = 3 \cos^3 x - 4 \rightarrow -1 \leq \cos^3 x \leq 1$

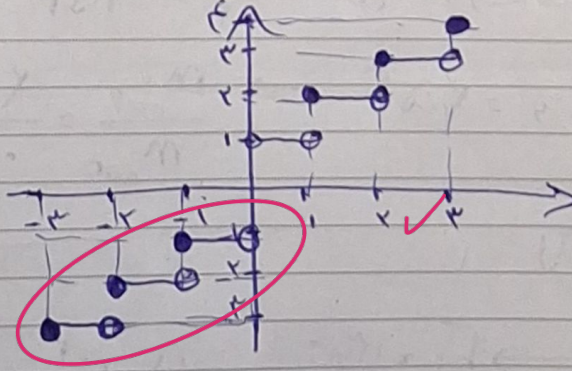
$\Rightarrow -1 \leq 3 \cos^3 x - 4 \leq -1 \rightarrow R_{g(x)} = [-5, -1]$

$y = \frac{x}{|x|} + [x] \Rightarrow \pm 1 + [x]$

$\rightarrow [-3, -2] = -1 - 3 = -4 / [-2, -1] = -1 - 2 = -3$

$\rightarrow [-1, 0] = -1 - 1 = -2 / [0, 1] = -1 + 0 = -1$

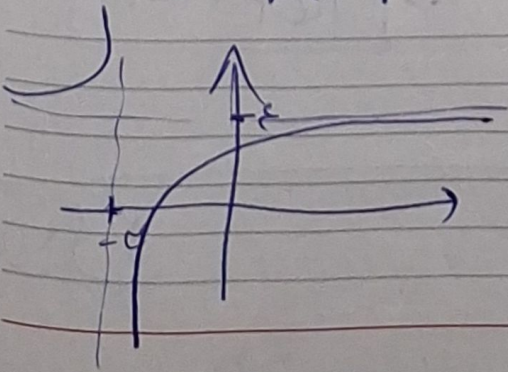
$\rightarrow [1, 2] = 1 + 1 = 2 / [2, 3] = 1 + 2 = 3$



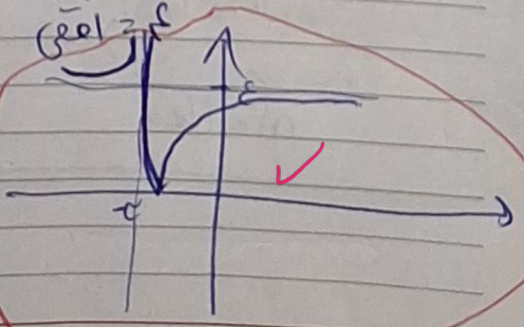
یادمانده پایش ندر!

صفحه آخر...

$y = \left| \frac{x+1}{x+3} \right| \rightarrow y = \frac{x+1}{x+3} \rightarrow \text{مقام} = -3$



تأثیر داران
محدودیت



$$|x-2| + |y-1| = 3$$

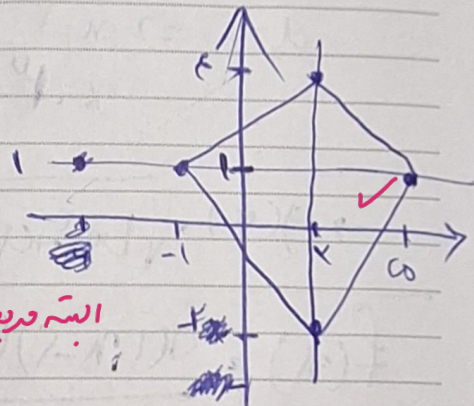
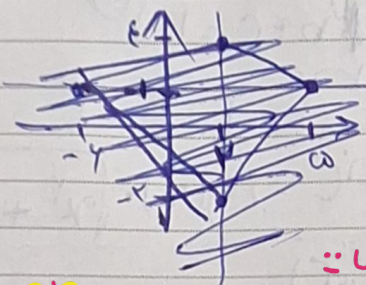
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$$2+1+3=6$$



البته مربعها ::

با ضابطه بنویس !!

$$f(x) = x + \frac{1}{x} + 2\sqrt{x + \frac{1}{x}}$$

مقیود متغیر باشد! →

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$$(-\infty, -2] \cup [2, +\infty)$$

$$[2\sqrt{2}, +\infty)$$

$$\rightarrow R_f = (-\infty, -2] \cup [2, +\infty) \cup [2\sqrt{2}, +\infty) = (-\infty, -2] \cup [2, +\infty) - (2\sqrt{2}, 2)$$

صفحه آخر...

$$y = -\sin^2 x + 2 \sin x + 3$$

$$\begin{aligned} \max & \rightarrow 4 \\ \min & \rightarrow -1 - 2 + 3 = 0 \\ -b/2a & \rightarrow -1/2 \end{aligned}$$

$$\Rightarrow R_f = [0, 4]$$

$$f(x) = \frac{1}{x} + 10, D_f = [1, 9]$$

$$+9 - 10 = -1$$

$$\frac{1}{x} + 10 \geq \frac{1}{9} + 10 \quad \text{و} \quad \frac{1}{x} + 10 \leq \frac{1}{1} + 10$$

$$9 \times 10 = 90 \quad \frac{1}{2} (1 + 4 + \dots + 9) = \frac{1}{2} \left(\frac{9 \times 10}{2} \right) = \frac{90}{2} = 45$$

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شنبه
۱۱ جمادی الثانی ۱۴۴۸
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(۲) (✓)

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 $f(x) = \sqrt{ax^2 + bx + c}$

$$\begin{aligned} a \neq 0 &\Rightarrow x=2 \rightarrow 2b+c=0 \\ x=1 &\rightarrow b+c=1 \end{aligned} \quad \textcircled{0}$$

$b=1 \quad c=-2$

$$\rightarrow g(x) = \sqrt{bx^2 + ax - c} \Rightarrow g(x) = \sqrt{x^2 + 1} \rightarrow \text{Reg}(x) = [2, +\infty)$$

$$f(x) = \frac{x(x-5)(x+7)}{x+2} = x(x-2) \quad \frac{x+2}{2} = \textcircled{1} \rightarrow y_1 = -1 \quad \textcircled{1}$$

$$Df = \mathbb{R} - \{a, b\}$$

$$x^2 - 2m = A \rightarrow x^2 - 2m - A = 0$$

$$(x+2)(x+7) = 0$$

$$a = -2, b = +2$$

$$\rightarrow Rf = [-1, +\infty) - \{1\} \Rightarrow \left[f\left(\frac{-2+2}{-2}\right), +\infty \right)$$

$$g = \sqrt{x^2 + ax^2 + bx - 1} \quad \text{با استفاده از مشتق$$

(۲) (۹)

$$\rightarrow x^2 + ax^2 + bx - 1 = (x-2)^2 = x^2 - 4x + 12 - 1$$

$$g(x) = \sqrt{(x-2)^2} \Rightarrow a = -4, b = +12 \rightarrow Df = [-4, +12]$$

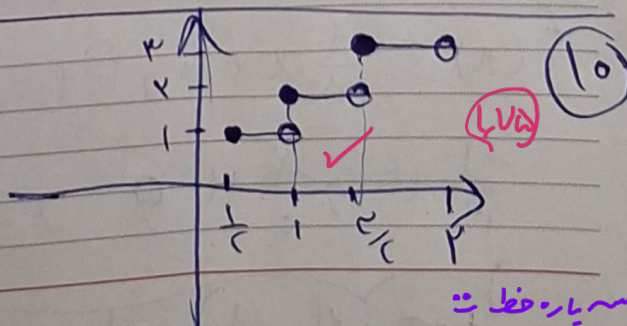
$$\rightarrow Rf = [-4-2, +12-2] \Rightarrow Rf = [-6, +10]$$

$$y = [x] + \left[x + \frac{1}{x}\right]$$

$$\left(x + \frac{1}{x} + 1\right) \rightarrow y = 1$$

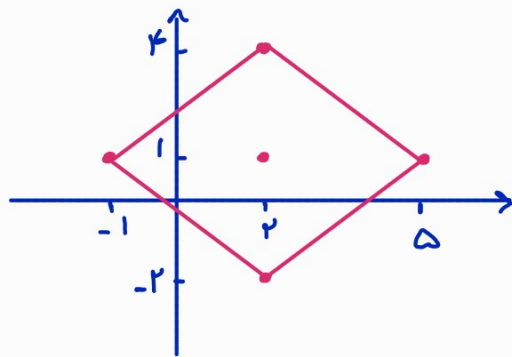
$$\left(x + 1 + \frac{x}{x}\right) \rightarrow y = 2$$

$$\left(\frac{x+2}{x} + 1\right) \rightarrow y = 3$$



سه پاره خط

$$\begin{cases} x \geq 2, y \geq 1 \rightarrow y = -x + 4 \\ x \geq 2, y \leq 1 \rightarrow y = x - 2 \\ x \leq 2, y \geq 1 \rightarrow y = x + 2 \\ x \leq 2, y \leq 1 \rightarrow y = -x \end{cases}$$



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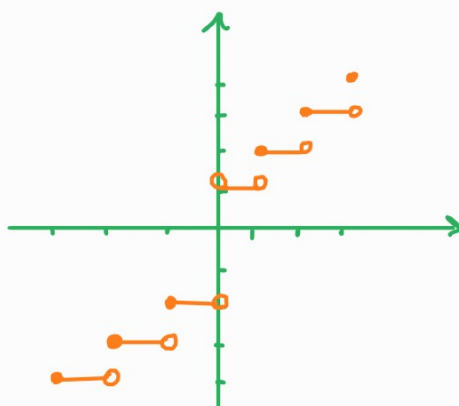
الف) $f(x) = x + \frac{1}{x} + 2 \sqrt{x + \frac{1}{x}}$

-5

$$\begin{cases} \min \square = \sqrt{2} \rightarrow f(x) = 2 + 2\sqrt{2} \\ \max \square \sim \infty \rightarrow f(x) = +\infty \\ \square = -\frac{b}{a} = -1 \quad x \end{cases}$$

$$\Rightarrow R_f = [2 + 2\sqrt{2}, +\infty)$$

$$y = \begin{cases} [x] + 1 & x > 0 \\ [x] - 1 & x < 0 \end{cases} \Rightarrow$$



-2