

الف) $y = f\left(\frac{x}{f} - \left[\frac{x}{f}\right]\right) \Rightarrow y = f - \frac{1}{f} \cdot \lfloor x \rfloor \Rightarrow R_f = [0, f)$

ب) $\log y = \sin x + f \Rightarrow 1 < \sin x \leq 1$

$y = 10^{\sin x + f} \Rightarrow R_f = [10^f, 10^{f+1}) =$

$g(n) = \frac{n^2 - 4}{n^2 + 9} \Rightarrow R_g = R - \left\{\frac{4}{9}\right\} \Rightarrow R_g = R - \left\{\frac{4}{9}\right\} \Rightarrow C = 1$

چون $\lim_{n \rightarrow \infty} \frac{n^2 - 4}{n^2 + 9} = 1 \Rightarrow \left(0, \frac{4}{9}\right) \cup (1, +\infty)$
 $\frac{0 - 4}{0 - 9} > 0 \Rightarrow R_g = (0, \frac{4}{9}) \cup (1, +\infty)$
 $0 + \frac{4}{9} + 1 = \frac{13}{9}$

الف) $f(x) = x + \frac{1}{x} \Rightarrow f(x) = \left(x + \frac{1}{x}\right)^2 - 1 \Rightarrow R_{f^2} = [0, +\infty)$

$R_g = [0, +\infty)$

ب) $y = 3 + 2 \sin x - \sin x - \sin^2 x \Rightarrow y = 3 + \sin x - \sin^2 x$
 $y = -\sin^2 x + \sin x + 3 \Rightarrow \sin x = 1 \Rightarrow y = 4$
 $\sin x = -1 \Rightarrow y = 2$
 $\sin x = \frac{b}{a} \Rightarrow \frac{b}{a} = \frac{1}{2} \Rightarrow b = \frac{a}{2}$

$-\frac{1}{3} (1 + 2 + 3 + 4 + 5 + 6 + 7) + 9 \alpha \beta = -\frac{10}{3} + 9 \alpha \beta$

$\frac{1}{3} (1 + 2 + 3 + 4 + 5 + 6 + 7) + 9 \alpha \beta = -\frac{10}{3} + 9 \alpha \beta$
 $\Rightarrow -\frac{10}{3} + 9 \alpha \beta = \frac{10}{3} \Rightarrow 9 \alpha \beta = \frac{20}{3} \Rightarrow \alpha \beta = \frac{20}{27}$

$a = 0 \Rightarrow \sqrt{b^2 + c^2} = 0 \Rightarrow b = -c \Rightarrow c = -b$

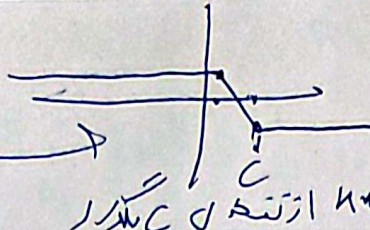
$y = \sqrt{bx - x^2} \Rightarrow \sqrt{1 - x^2} = \sqrt{b} \Rightarrow b = 1 \Rightarrow c = -1$

$g(x) = \sqrt{x^2 + 1} \Rightarrow R_g = [1, +\infty)$

$$x=2 \Rightarrow y=-1$$

$$x=1 \Rightarrow y=2$$

$$(x-2) - (x-1) = y$$



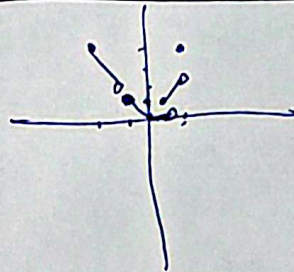
$$k = -\frac{1}{1}$$

$$\Rightarrow \begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 2 \\ -1 \end{bmatrix} \Rightarrow a = \frac{\Delta y}{\Delta x} = \frac{1}{-2} \Rightarrow y = -\frac{1}{2}x$$

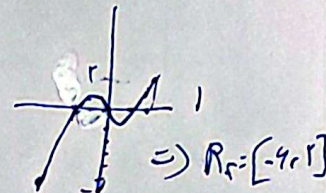
تقاطع ارجاع نقطه
با y و x برقرار دارند
خط x از نقطه C عبور می کند

$$y = \begin{cases} x & 1 \leq x < 2 \\ 0 & 0 \leq x < 1 \\ -x & -1 \leq x < 0 \\ -2x & -2 \leq x < -1 \end{cases}$$

$$y = \begin{cases} x^2 - x & x \geq 0 \\ -x^2 - x & x < 0 \end{cases}$$



$$R_f = [0, 2] \cup [2, 4]$$



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

نقطه ای که نقطه
در -1، رانندگی از آنجا می
سج در آن محور

$$R_f = R_{-} \{0, -2\}$$

$$0 + -2 = -2$$

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$$f(x) = \frac{(\sqrt{x}-1)(\sqrt{x}-1)}{(\sqrt{x}-1)(\sqrt{x}-1)} = \frac{\sqrt{x}-1}{\sqrt{x}-1} = 1 - \frac{1}{\sqrt{x}-1} = R_x$$

۰ < √x < 1 → x ∈ [0, 1)

$$x > 1 \Rightarrow y = (-\infty)$$

$$R_x = (-\infty, 1) \cup (1, \infty)$$

$$f(x) = \frac{x^2 + 2x^2 + x - 2}{x^2 - 1} = x + 2 \rightarrow$$

در صورتی که این
در -1، رانندگی از آنجا می

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$$R_f \subset R_{-} \{2, 1\}$$