

$g(y) = \sin x + f \Rightarrow y = 1 + \sin x + f$ $-1 \leq \sin x \leq 1 \Rightarrow 2 \leq \sin x + f \leq 4$ $y \Rightarrow 1 + 2 \leq 1 + \sin x + f \leq 1 + 4 \Rightarrow 3 \leq y \leq 5$ $R_f = [3, 5]$	الف) $f\left(\frac{x}{r} - \left[\frac{x}{r}\right]\right)^2 \quad t - [t] \in [0, 1)$ $\Rightarrow f(\alpha)^2 \in [0, 1)$ $\Rightarrow R_f = [0, 1)$
---	--

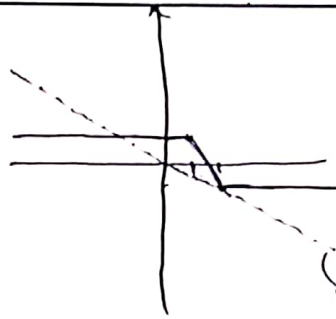
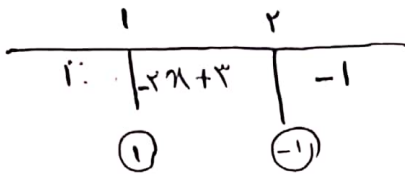
$x^2 \rightarrow 0 \Rightarrow \frac{x^2 - f}{x^2 - 9} = \frac{f}{9}$ $x^2 \rightarrow +\infty \Rightarrow \frac{x^2 - f}{x^2 - 9} = 1$ $\Rightarrow \frac{x^2 - f}{x^2 - 9} \in (-\infty, \frac{f}{9}] \cup (1, +\infty)$	الف) $\sqrt{\frac{x^2 - f}{x^2 - 9}} \in [0, \frac{r}{r}] \cup (1, +\infty)$ $\Rightarrow R_f = [0, \frac{r}{r}] \cup [1, +\infty)$ $\begin{matrix} a & b & c \end{matrix}$ $\Rightarrow a + b + c = 0 + \frac{r}{r} + 1 = \frac{5}{r}$
--	---

$y = 3 \sin x - \sin x - \sin^2 x + 3$ $y = -\sin^2 x + 2 \sin x + 3$ $\left. \begin{array}{l} \sin x \rightarrow \min = -1 \rightarrow 0 \\ \sin x \rightarrow \max = 1 \rightarrow f \\ -\frac{b}{2a} = 1 \rightarrow f \end{array} \right\} \Rightarrow R_f = [0, f]$	الف) $\sqrt{x + \frac{1}{x}} \geq 2 \Rightarrow t^2 + 2t$ $\frac{t}{t} \rightarrow t = 2 \rightarrow \min = f + t = 1$ $\rightarrow t = +\infty \rightarrow \max = +\infty$ $[1, +\infty)$ $\frac{-b}{2a} = \frac{-2}{2} = -1 \rightarrow x$
--	--

$D_f = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ $f \rightarrow$ دایره جابی $\left. \begin{array}{l} f(1) = \frac{29}{3} \\ f(9) = \frac{21}{3} \end{array} \right\} \Rightarrow S_{1,9} = \left(\frac{29}{3} + \frac{21}{3}\right) \times \frac{9}{2} = 75$	۴
---	----------

$0 \leq a x^2 + b x + c \rightarrow \text{خطی است} \rightarrow a = 0$ $\frac{r}{-\frac{1}{4} +}$ (یکدسته) (غیر صاف) $g(x) = \sqrt{x^2 - f} \Rightarrow R_g = [0, +\infty)$	۵
---	----------

$$|x-2| - |x-1| = Kx$$



$$K = \text{حسب} = \frac{\Delta y}{\Delta x}$$

$$= \frac{-1}{2} = -\frac{1}{2}$$

$$\Rightarrow K = -\frac{1}{2}$$

9

$$y = x[x]$$

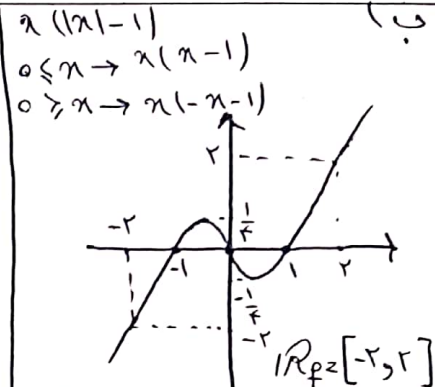
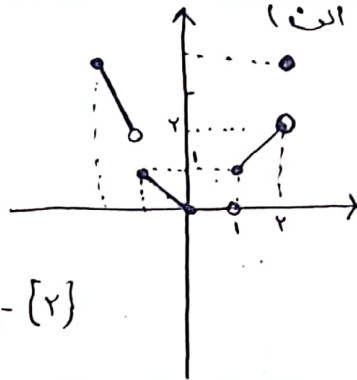
$$-2 \leq x < -1 \rightarrow -2x$$

$$-1 \leq x < 0 \rightarrow -x$$

$$0 \leq x < 1 \rightarrow 0$$

$$1 \leq x < 2 \rightarrow x$$

$$x = 2 \rightarrow 2x \quad R = [0, 2] - \{1\}$$



9

$$y = \frac{2(x+1)}{x(x+1)} = \frac{2}{x}, \quad x \neq -1$$

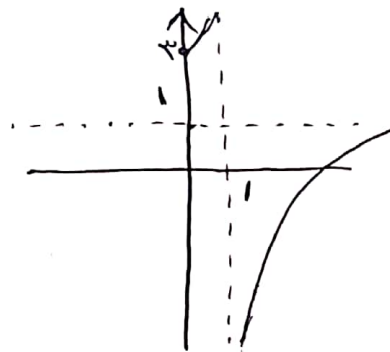
$$\frac{2}{x} \in R - \{0\} \quad x \neq -1 \Rightarrow y = -2$$

$$R_f = R - \{-2, 0\} \rightarrow a+b = -2$$

1

$$\frac{(\sqrt{x}-3)(\sqrt{x}-1)}{(\sqrt{x}-1)(\sqrt{x}-1)} = \frac{\sqrt{x}-3}{\sqrt{x}-1} \quad \sqrt{x}=t \quad 0 \leq t \quad \frac{t-3}{t-1}$$

$$R = R - [1, 3)$$



9

$$f(x) = \frac{(x^2-1)(x+2)}{x^2-1} = x+2 \quad x \neq \pm 1 \quad \Rightarrow 1+2=3$$

$$x=1 \rightarrow x+2=3 \Rightarrow R_f = R - [1, 3]$$

$$x=-1 \rightarrow x+2=1$$

10