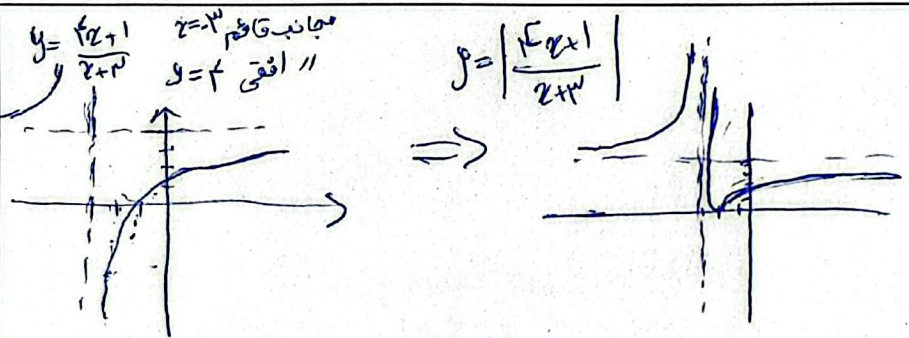
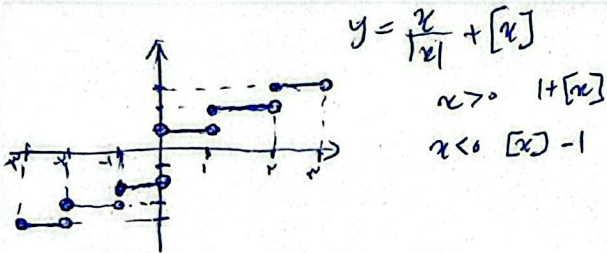
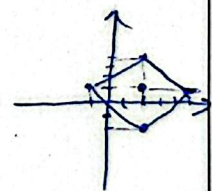
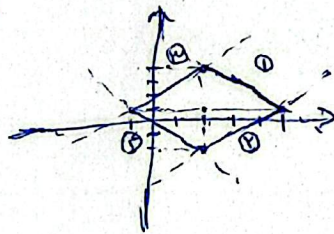


الف) $[-1, 1] \cup [2, 3] = R_f$

ب) $[-1, 1] \cup [2, 3] = R_g$



$x \geq 2 \rightarrow x - y = 1$ ①
 $y < 2 \rightarrow y = x$ ②
 $x < 2 \rightarrow x + y = 1$ ③
 $y < 2 \rightarrow -x = y$ ④



الف) $f(x) = x + \sqrt{x}$ $R = [2, +\infty)$
 $t = (x + \frac{1}{x})$ $t \geq 2.5$ $x + \sqrt{x}$

$y = -\sin^2 x + 2 \sin x + 3 = -t^2 + 2t + 3$ $R = [0, 4]$
 $t = \sin x \rightarrow [-1, 1]$ $\frac{b}{2a} = 1$

$$D_f = \{1, 2, 3, \dots, 9\} \quad \sum R = \frac{1}{2} (f_0) + (10 \times 9) = 90 - 10 = \underline{80}$$

$$\frac{(h+1)h}{2}$$

6

چون یک بازه است پس تابع آنرا در کمال خطی است $Q=9$

$$\begin{cases} f(x)=1 & 3b+c=1 \\ f(2)=0 & 2b+c=0 \end{cases} \quad \begin{matrix} b=1 \\ c=-2 \end{matrix}$$

7

$$f(x) = \sqrt{x^2 + 2} \rightarrow [2, \infty) = R_f = [2, \infty)$$

$$D_g = R_{f^{-1}(x)}$$

$$1 = \frac{x(x-2)(x+2)}{x+2} \rightarrow x^2 - 2x - 1 = 0 \quad 1 \pm \sqrt{5} \rightarrow \begin{matrix} -2 \\ 3 \end{matrix}$$

$$\begin{matrix} a=-2 \\ b=3 \end{matrix} \quad f\left(\frac{f(x)-2}{x-1}\right) = f(-1) = (-1)^2 - 2(-1) = \underline{3}$$

$$f(x) = x^2 - 2x$$

$$L \text{ min} = \left| \frac{f'(x)}{f''(x)} \right| = \underline{c=-1}$$

8

$$y = \int_0^x (x-2)^3 = x-2 \xrightarrow{\text{محدوده تعریف}} R_f = [1, 1.5]$$

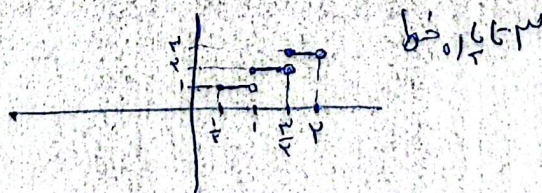
$$D_y = [2, 1.5]$$

$$x^3 - 4x^2 + 12x - 1$$

$$\begin{matrix} a=-4 \\ b=12 \end{matrix}$$

9

$$\begin{aligned} \left[\frac{1}{2}, 1\right) &\rightarrow 0+1=1 \\ \left[1, \frac{3}{2}\right) &\rightarrow 1+1=2 \\ \left[\frac{3}{2}, 2\right) &\rightarrow 1+2=3 \end{aligned}$$



10