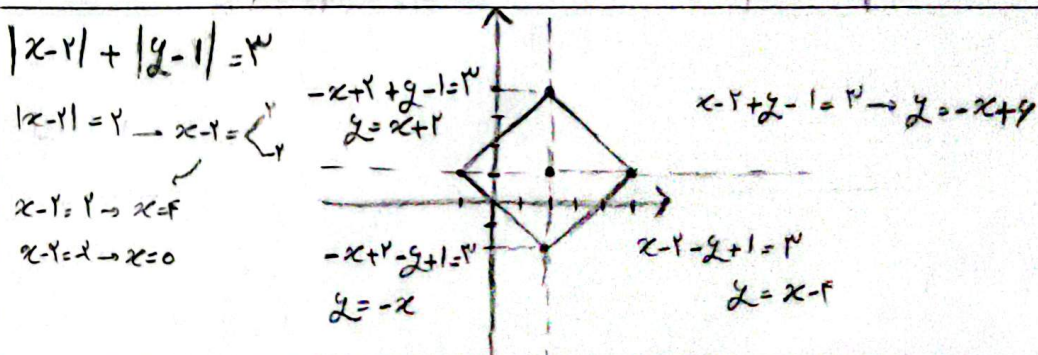
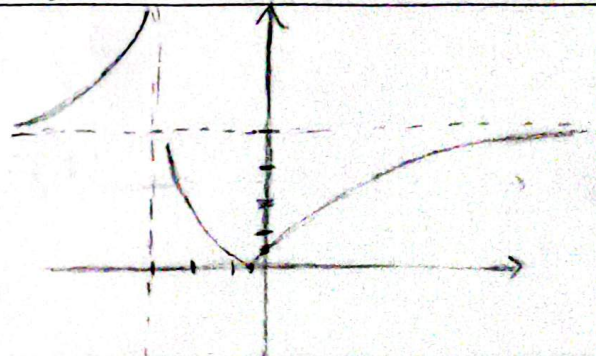
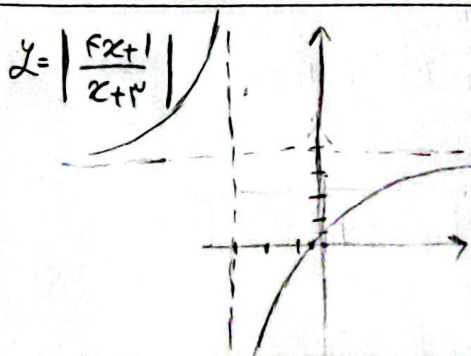
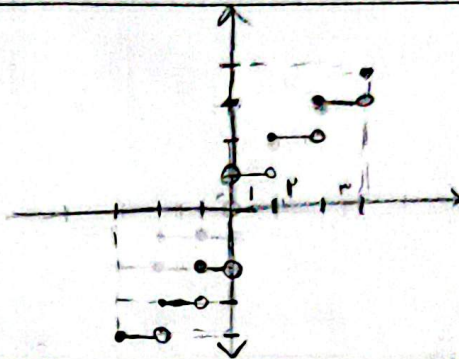


الف) $y = \frac{2 \sin^2(x + \frac{\pi}{3}) - 1}{\sqrt{[0, 1]}}$

$R_y = [-1, 1]$

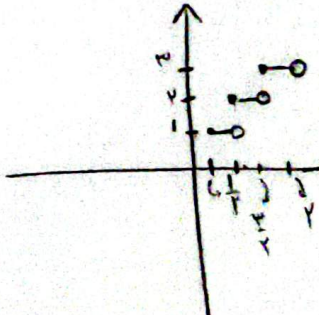
ب) $y = \frac{3 \cos^2 x - 4}{\sqrt{[-1, 1]}}$
 $R_y = [-1, -1]$

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



الف) $y = x + \frac{1}{x} + 2\sqrt{x + \frac{1}{x}} = t + 2\sqrt{t} \xrightarrow{t \geq 2} t = 2 + 2\sqrt{2} \rightarrow R_y = [2 + 2\sqrt{2}, +\infty)$

ب) $y = (2 - \sin x)(1 + \sin x) = -\sin^2 x + 2\sin x + 2$
 $0 \leftarrow -1 \rightarrow \frac{-b}{2a} = \frac{-2}{-2} = 1 = f$
 $R_y = [0, 4]$

$f(x) = -\frac{1}{x}x + 10$ $\downarrow$ $D_f = \{1, 2, 3, \dots, 9\}$ $x=1 \rightarrow y = 9 \cdot \frac{1}{1} = \frac{9}{1}$ $x=2 \rightarrow y = \frac{10}{2} = 5$	$x=3 \rightarrow y=9$ $x=4 \rightarrow y = 1 \cdot \frac{1}{4} = \frac{1}{4}$ $x=5 \rightarrow y=1$ $x=6 \rightarrow y = \frac{10}{6} = \frac{5}{3}$	$x=1 \rightarrow y = 9 \cdot \frac{1}{9} = \frac{9}{9}$ $x=9 \rightarrow y=9$ $D_{f \circ g} = \overbrace{3(9+1+9)} + \overbrace{3(\frac{1}{9} \cdot \frac{9}{9})}$ $\hookrightarrow 3(9f) + 3 = 3(9d) = \boxed{9d}$
$f(x) = \sqrt{ax^2 + bx + c} \rightarrow \sqrt{bx + c}$ $\hookrightarrow D_f = [2, +\infty)$ $\boxed{a=0} \leftarrow \text{نبودن } a$	$g(x) = \sqrt{x^2 + f} \Rightarrow R_g = [f, +\infty)$	$\begin{cases} x=2 \rightarrow 2b+c=0 \\ x=3 \rightarrow 3b+c=1 \end{cases} \rightarrow \begin{cases} b=1 \\ c=-2 \end{cases}$
$f(x) = \frac{x^3 - 4x}{x+2} = \frac{x(x^2 - 4)}{x+2} = \frac{x(x-2)(x+2)}{x+2} = x(x-2)$ $x(x-2) = 1$ $x^2 - 2x - 1 = 0$ $x - 1(x+2) = 0$ $\downarrow \quad \downarrow$ $f \quad -2 \Rightarrow \boxed{x \neq \{-2, f\}}$	$\downarrow$ $\boxed{x \neq -2}$ $\rightarrow f\left(\frac{-2+f}{2(-1)}\right) = f\left(\frac{f}{-2}\right) = f(-1)$	$R_f = [-1, +\infty) - \{1\}$ $\downarrow c$ $\hookrightarrow = (-1)(-3) = \boxed{3}$
$y = \sqrt{x^3 + ax^2 + bx - 1} = x - 2$ $(x-2)^3 = x^3 - 4x^2 + 12x - 1$ $\downarrow \quad \downarrow$ $\boxed{a=-4} \quad \boxed{b=12}$ $D_f = [-9, 12]$	$\begin{cases} x=-9 \rightarrow y=-1 \\ x=12 \rightarrow y=10 \end{cases} \rightarrow R_f = [-1, 10]$	
$y = [x] + [x + \frac{1}{4}]$ $\downarrow$ $D_f = [\frac{1}{4}, 2)$ $\frac{1}{4} \leq x < 1 \rightarrow 0 + 1 = 1$ $1 \leq x < \frac{5}{4} \rightarrow 1 + 1 = 2$		$\frac{3}{4} \leq x < 2 \rightarrow 1 + 2 = 3$ از سه پاره خط تشکیل شده.