۱۸٫۷۵

نام و نام خانوادگی ....سارا ابراسانی....... پاسخنامه تشریحی تکلیف شماره ...۷... کلاس ...یازدهم دختر A.......

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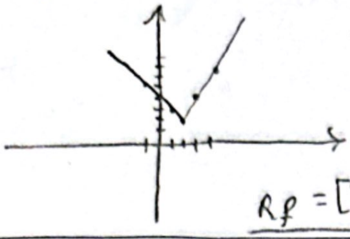
الف)

$$f(x)\begin{cases}3x-4 & ; x\geqslant 2\\ 4-x & x<2\end{cases}$$



$R_f=[2,+\infty)$

ب)

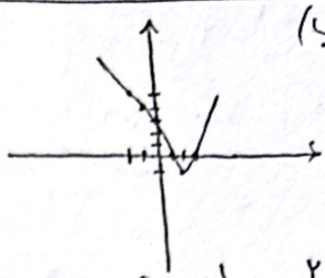
$x=2\to y=-1$

$x=1\to y=0$

$x=0\to y=3$

$x=3\to y=0$

$x=-1\to y=4$



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

$R_f=[-1,+\infty)$

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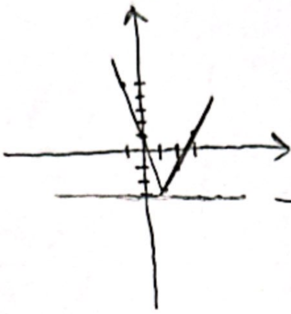
$$f(x)=\begin{cases}3x-5 & ; x\geqslant 1\\ 1-4x & ; -2\leqslant x\leqslant 1\\ 5-2x & x\leqslant -2\end{cases}$$



$\longrightarrow$ برای اینکه یک ریشه داشته باشد $\{\ K=-3$

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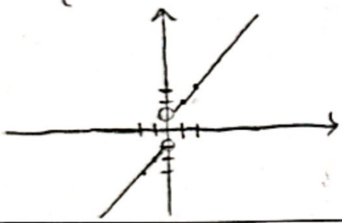
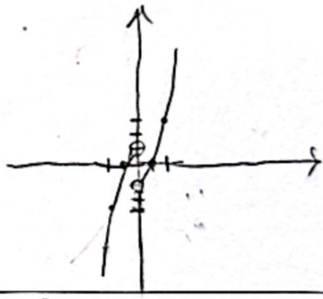
الف)

$$f(x)=\begin{cases}x+1 & ; x>0\\ x-1 & ; x<0\end{cases}$$



ب)

$$f(x)=\begin{cases}x^2-1 & ; x>0\\ 1-x^2 & ; x<0\end{cases}$$



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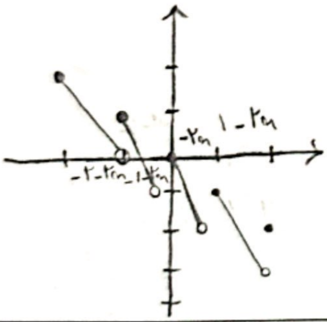
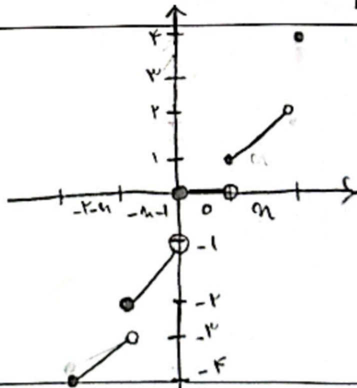
الف)



ب)



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الف) $0\leqslant x-[x]<1 \longrightarrow R_f=[0,1)$

ب) $y=4x-4[x]\longrightarrow y=4(x-[x])\longrightarrow 0\leqslant x-[x]<1\longrightarrow R_f=[0,4)$

ج) $y=x-5\left[\frac{x}{5}\right]\longrightarrow y=5\left(\frac{x}{5}-\left[\frac{x}{5}\right]\right)\longrightarrow R_f=[0,5)$

د) $-1<[x]-x\leqslant 0\longrightarrow R_f=(-1,0]$

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الف) $-\sqrt{a^2+b^2} \leq a\sin x + b\cos x \leq \sqrt{a^2+b^2} \longrightarrow R_f = [-\sqrt{13}, \sqrt{13}]$

ب) $a^2=16 \quad b^2=9 \xrightarrow{a^2+b^2=25} R_f = [-5, 5]$

ج) $-\sqrt{29} \leq 2\sin x + 5\cos x \leq \sqrt{29} \longrightarrow R_f = \{-6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$

د) $-\sqrt{5} \leq \cos x - 2\sin x \leq \sqrt{5} \longrightarrow R_f = [0, \sqrt[4]{5}]$

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الف) $\sin x = 1 \longrightarrow y = 6$ max

$\sin x = -1 \longrightarrow y = 0$

$\sin x = -\frac{b}{2a} = -\frac{3}{2}$ غ ق $\longrightarrow y = -\frac{1}{4}$ min

$R_f = [\overset{0}{\cancel{-\frac{1}{4}}}, 6]$

ب) $\sin x = 1 \longrightarrow 7$

$\sin x = -1 \longrightarrow 1$

$\sin x = -\frac{b}{2a} = -\frac{3}{4} \rightarrow y = \frac{14}{16} = \frac{7}{8}$

$R_f = [\frac{7}{8}, 7]$

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الف) $\sin^2 = 1 - \cos^2 \rightarrow 1 - \cos^2 x + 4\cos^2 x = 3\cos^2 x + 1$

$0 \leq \cos^2 x \leq 1 \qquad R_f = [1, 4]$

ب) $\dfrac{\frac{2\cos x}{\sin x}}{\underbrace{1 + \frac{\cos^2 x}{\sin^2 x}}_{\frac{\cancel{\sin^2 x + \cos^2 x}\,1}{\sin^2 x}}} = \dfrac{\frac{2\cos x}{\sin x}}{\frac{1}{\sin^2 x}} = 2\cos x \sin x = \sin 2x \Rightarrow R_f = [-1, 1]$

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الف) $2^{1-k} \leq \sin^{2k} x + \cos^{2k} x \leq 1 \xRightarrow[k=3]{} 2^{1-3} = \frac{1}{4}$

$R_f = [\frac{1}{4}, 1]$

ب) $2^{1-k} \underset{k=4}{=} \frac{1}{8} \Rightarrow \frac{1}{8} \leq \sin^8 x + \cos^8 x \leq 1$

$R_f = \{0, 1\}$

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الف) $\underbrace{2x^2 + 7x - 4}_{\text{ضرب}} \longrightarrow x^2 + 7x - 8 = (x + \frac{8}{2})(x - \frac{1}{2}) \longrightarrow y = \frac{\cancel{(x+4)}\overset{(2x-1)}{\cancel{(x - \frac{1}{2})}}}{\cancel{(x+4)}} \rightarrow$

$x \neq -4$

$y = (x - \frac{1}{2}) \longrightarrow \frac{2y+1}{2} = x$

$R_f = \mathbb{R} - \{\overset{-9}{\cancel{-\frac{9}{4}}}\}$

ب) $y = \frac{\cancel{(x-1)}(x^2+x+1)}{\cancel{(x-1)}} = x^2 + x + 1 \longrightarrow y = x^2 + x + 1 \longrightarrow -\frac{b}{2a} = -\frac{1}{2} \Rightarrow y = \frac{3}{4} \Rightarrow R_f = [\frac{3}{4}, +\infty) - \cancel{\{3\}}$

$x \neq 1$