نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس .....

۱

$$\begin{cases} x \geq 1 \rightarrow \frac{1}{x-1} = x-1 \rightarrow x^2-2x \rightarrow x(x-2) \begin{cases} 2 \\ 0 \end{cases} \text{قبول} \\ x < 1 \rightarrow \frac{1}{x-1} = -x+1 \rightarrow x^2-2x+2=0 \rightarrow \Delta < 0 \rightarrow \text{ریشه ندارد} \end{cases} \rightarrow \text{یک ریشه دارد}$$

۲

الف) $-2 < \frac{2x-1}{x} < 2 \rightarrow -2 < 2-\frac{1}{x} < 2 \rightarrow 0 < \frac{1}{x} < 4 \rightarrow 1 < 4x \rightarrow x > \frac{1}{4}$

ب) $\frac{x-2}{2x+1} > 1 \rightarrow \frac{-x-3}{2x+1} > 0 \rightarrow$ (-3, -1/2) , $\frac{x-2}{2x+1} < -1 \rightarrow \frac{3x-1}{2x+1} < 0 \rightarrow$ (-1/2, 1/3) $\rightarrow \cup \rightarrow (-3, \frac{1}{3}) - \{-\frac{1}{2}\}$

۳

$x^2 < x+4 \rightarrow x^2-x-4 < 0 \rightarrow (x-3)(x+2) < 0 \rightarrow$ (-2, 3)

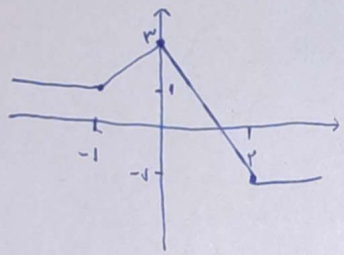
$a-\beta < x < a+\beta$

$a-\beta = -2$

$a+\beta = 2$ $\Rightarrow a = \frac{-1}{2}$

۴

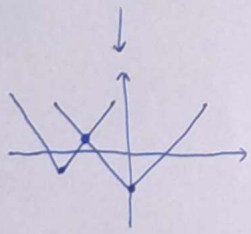
$$\begin{cases} 1 & x \leq -1 \\ 2x+3 & -1 < x \leq 0 \\ -2x+3 & 0 < x \leq 2 \\ -1 & 2 < x \end{cases} \rightarrow$$



$Max = 3$, $Min = -1$ $\Rightarrow 3-1 = 2$

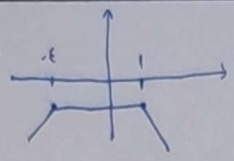
۵

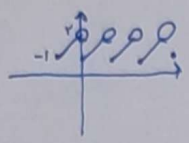
$y = |\frac{1}{2}x| - 2 \xrightarrow[\text{به چپ}]{\text{۴ واحد}} |\frac{1}{2}x+4| - 2 \xrightarrow[\text{مثبت}]{\text{ادامه به طرف}} |\frac{1}{2}x+4| - 1 \rightarrow \frac{1}{2}x+4-1 = \frac{-1}{2}x-2 \rightarrow x_0 = -6$



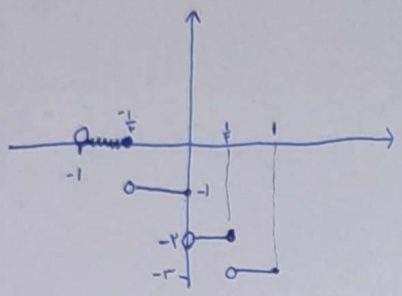
Scanned with CamScanner

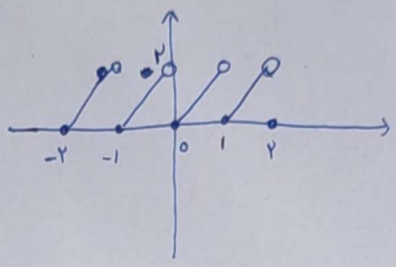
۶

الف) $[-(|x-1|+|x+4|)] \rightarrow$  $\rightarrow R_f = x \geq -5 \,,\, x \in \mathbb{Z}$

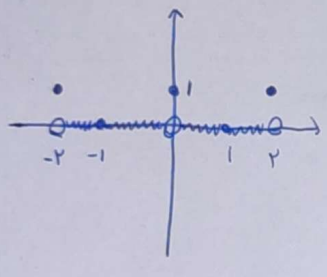
ب) $\frac{1}{x} - [\frac{1}{x}] + 1 \rightarrow$  $\Rightarrow R_f = [1,2)$

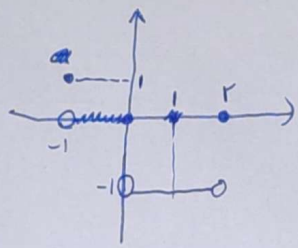
۷

الف) 

ب) 

۸

الف) 

ب) 

۹

$a = x/2$, $b = y/4$ $\Rightarrow$ $[a]+[b]=4$, $[b]-[a]=2$ $\rightarrow 2[b]=6 \rightarrow b=3/4$, $a=1/2$ $\Rightarrow a+b = 4/6$

۱۰

$[(1+\sqrt{2})^6] = [198-(1-\sqrt{2})^6] = [198-(49+50-70\sqrt{2})] = [99+70\sqrt{2}] \Rightarrow 99+[\underbrace{70\sqrt{2}}_{98}] = 197$