۱۷٫۷۵

موضوع: علی عزیزان - تکلیف ۲۰ | | تاریخ: / /

۱- (۲) $\frac{1}{x-1} \leq |x-1| \rightarrow |x-1|^2 \leq 1 \rightarrow x^2-2x+1 \leq 1$

$\rightarrow x^2-2x \leq 0 \rightarrow x(x-2) \leq 0$ چون $x \neq 0$ ✓

$x \leq 2$ ✓

۲- (۲) الف) $-2 < \frac{x^2-1}{x} < 2 \rightarrow -2 < \frac{1}{x} - x < 2$

$-4 < -\frac{1}{x} < 0 \rightarrow x > \frac{1}{4}$ ✓

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

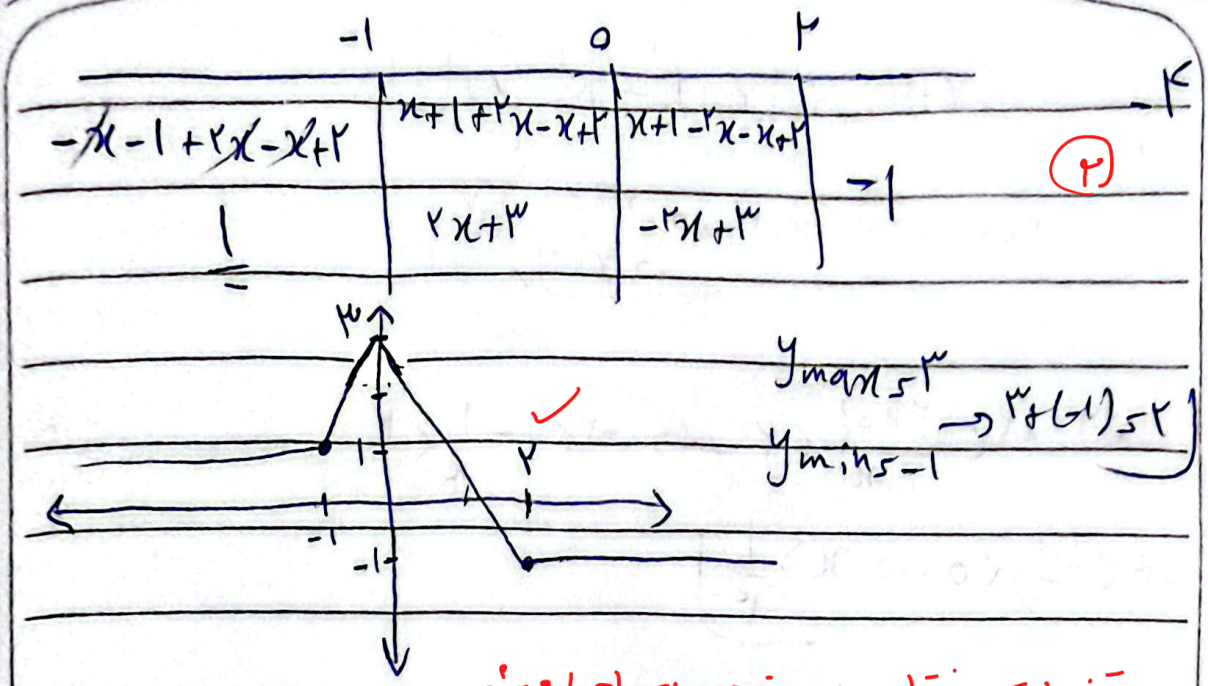
$\frac{x-2}{2x+1} < -1 \rightarrow \frac{3x-1}{2x+1} < 0 \rightarrow -\frac{1}{2} < x < \frac{1}{3}$

$\rightarrow x \neq -\frac{1}{2} \rightarrow x \in (-3, \frac{1}{3}) - \{-\frac{1}{2}\}$ ✓

۳- (۲) $-x-6 < x^2 < x+6 \rightarrow \begin{cases} x^2 > -x-6 \rightarrow x^2+x+6 > 0 \text{ همواره} \checkmark \\ x^2 < x+6 \rightarrow x^2-x-6 < 0 \rightarrow -2 < x < 3 \end{cases}$

$|x-\frac{1}{2}| < \frac{5}{2} \rightarrow 5 = \frac{1}{2}$ ✓

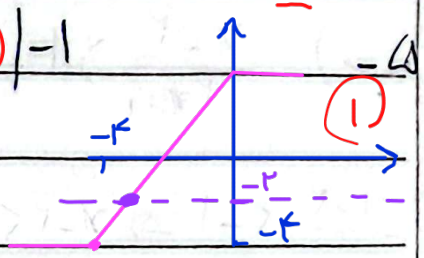
موضوع: ——— تاریخ: / /




تغییرات دقیقا روی خود $x$ اجرا میشه

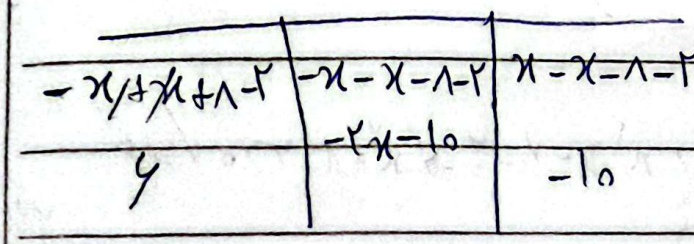
$$y'=\left|\frac{1}{2}(x+4)\right|-2+1=\left|\frac{1}{2}(x+4)\right|-1$$

$$\left|\frac{1}{2}x\right|-2=\left|\frac{1}{2}(x+4)\right|-1$$




$$\times 2 \rightarrow |x|-4=|x+4|-2 \rightarrow |x|-|x+4|-2=0$$

$|x+4|-|x|=-2$ تابع آبشاری




$-4<x<0$

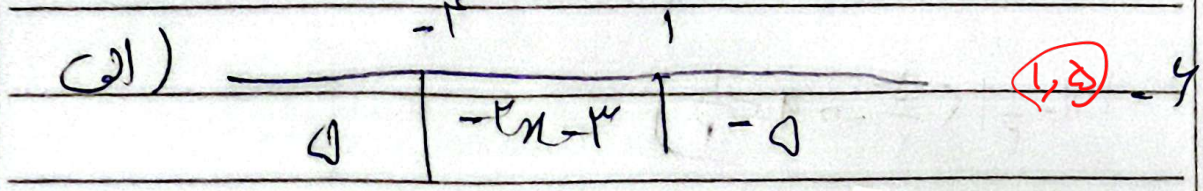
| | | |
|---|---|---|
| $-x^2+8x+8-2$ | $-x-x-1-2$ | $x-x-8-2$ |
| $y$ | $-2x=10$ | $-10$ |

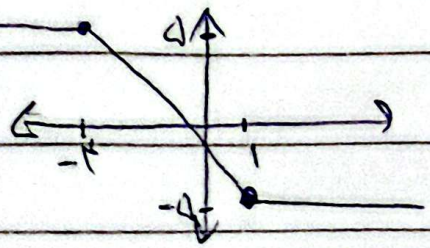
$x+4<x=-2 \rightarrow x=-3$

$\rightarrow -2x-6=0$

$\rightarrow x=-3$

الف)




$$Rf=\{-5,-4,\dots,4,5\}$$

تاریخ: / /

۶- ب) $f(x)=\frac{1}{x}-\left[\frac{1}{x}+1\right]=\frac{1}{x}-\left[\frac{1}{x}\right]-1$ (دقت!)

$0<\frac{1}{x}\leq 1 \rightarrow -1\leq -\left[\frac{1}{x}\right]<0 \rightarrow R=[-1,0)$

$R_f=[-1,0)$

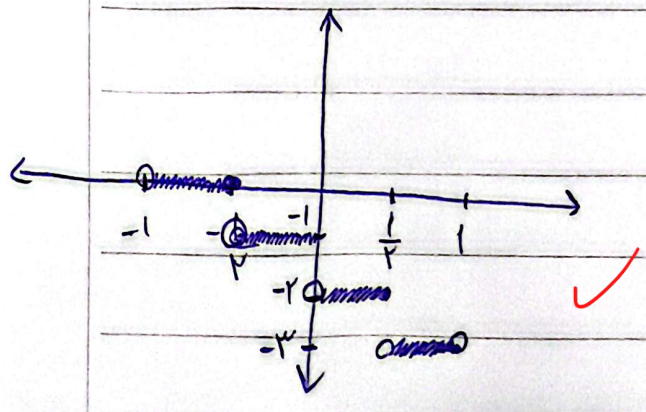
۷- الف) $-1<x<\frac{1}{2} \rightarrow 2x-1<0 \rightarrow y=0$

$\frac{-1}{2}<x<0 \rightarrow 2x-1<0 \rightarrow y=-1$

$0<x<\frac{1}{2} \rightarrow 2x-1>0 \rightarrow y=-2$

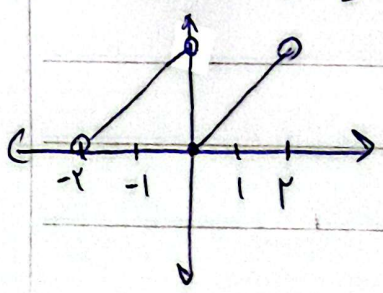
$\frac{1}{2}<x<1 \rightarrow 2x-1>0 \rightarrow y=-3$

(۲)




ب) $-2<x<0 \rightarrow \left[\frac{x}{2}\right]=-1 \rightarrow y=x+2(-1)=x-2$

$0<x<2 \rightarrow \left[\frac{x}{2}\right]=0 \rightarrow y=x$



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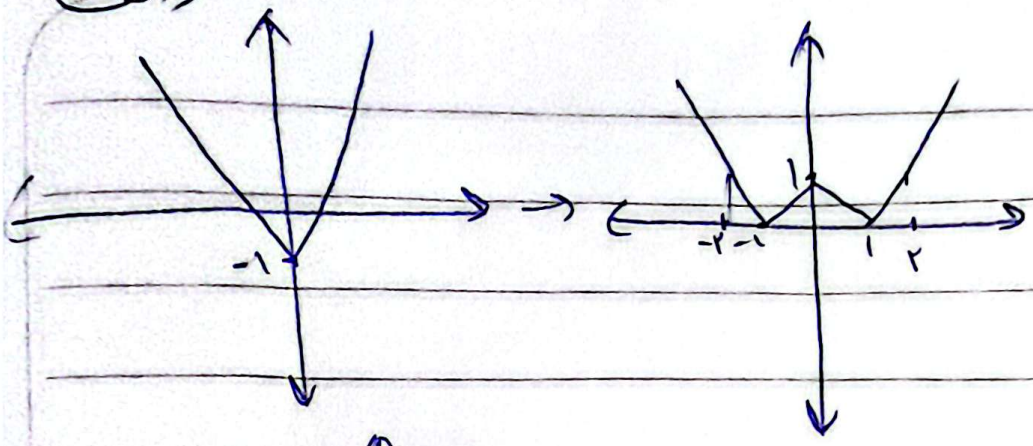
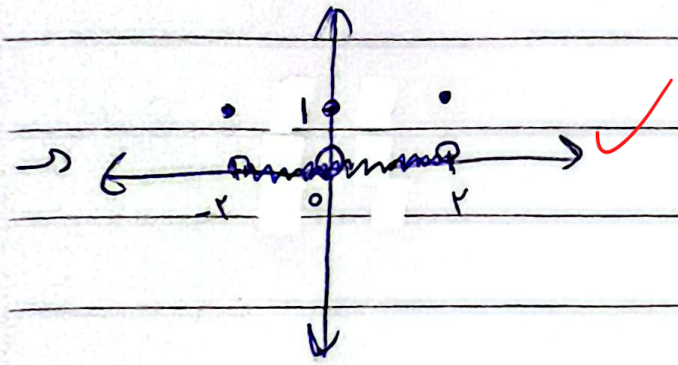
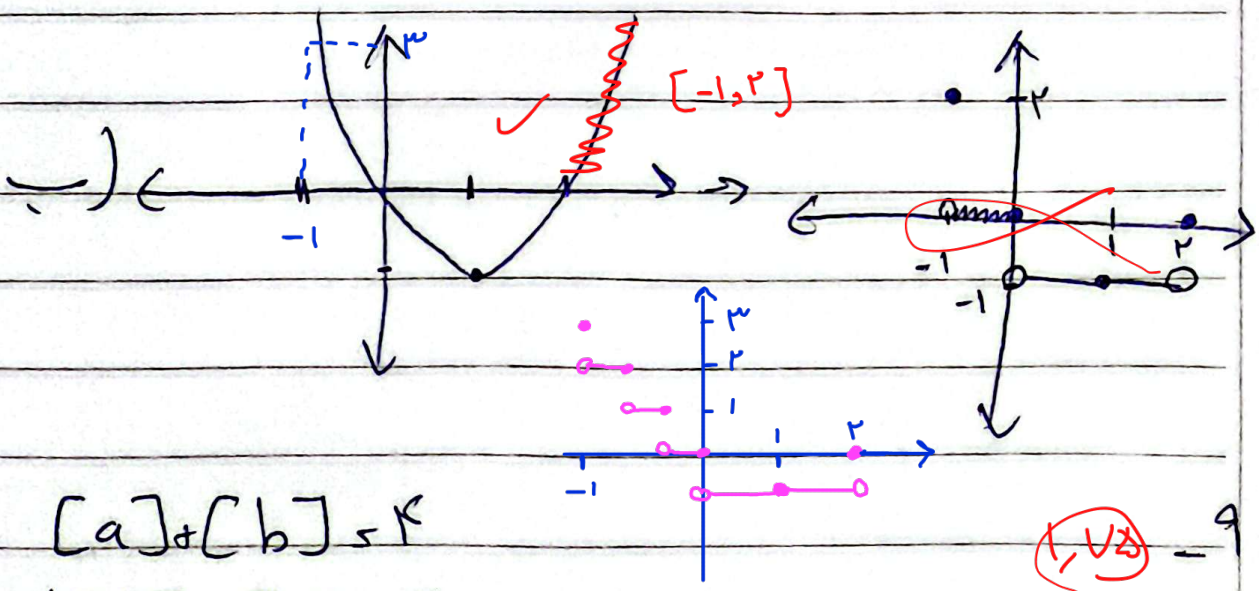



۸- (۱,۵)




ب)




۹- (۱,۷۵)

$[a]+[b]=۴$

$+\quad [b]-[a]=۲$

$۲[b]=۶ \rightarrow [b]=۳ \rightarrow b=۳,۴ \rightarrow [a=۱,۲)$

$a+b=۴,۶$

۱۰- (۲)

$(۱+\sqrt{۲})^۲=۱۹۸-(۱-\sqrt{۲})^۲$

$-۱<(۱-\sqrt{۲})<۰$

$۰<(۱-\sqrt{۲})^۲<۱$

$۱۹۷<۱۹۸-(۱-\sqrt{۲})^۲<۱۹۸ \rightarrow [۱۹۸-(۱-\sqrt{۲})^۲]=[۱۹۷)$