نام و نام خانوادگی .... پاسخنامه تشریحی تکلیف شماره ۳ کلاس ....

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$y=\frac{x^2+x+2}{x-1}$ $yx-y=x^2+x+2$ $\mathbb{R}-(-1,7) \leftarrow$ برد

$x^2+(1-y)x+y+2=0$

$\Delta=\cancel{(1-y)^2}-\cancel{4(y+2)}=\cancel{1}+y^2-6y-\overset{-7}{\cancel{8}}=y^2-6y-7$

$1+y^2-2y \quad -4y-8$

$\Delta\geq 0$ باید $\longrightarrow$ $y^2-6y-7\geq 0$

$(y-7)(y+1)\geq 0$

$y: \mathbb{R}-(-1,7)$

$\begin{array}{ccccc} & -1 & & 7 & \\ + & | & - & | & + \end{array}$

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الف) $y=2x^2-5x+1$

$\rightarrow$ Min $\left|\begin{array}{l}\frac{-b}{2a}=\frac{5}{4}\\ 2\left(\frac{25}{16}\right)-\frac{25}{4}+1=\frac{\overset{-25}{\cancel{25-50}}+8}{8}=\frac{-17}{8}\end{array}\right.$ برد $=\left[-\frac{17}{8},+\infty\right)$

ب) $\frac{-b}{2a}=\frac{-6}{-2}=\boxed{3}$ Max

$(-\infty,3] \longrightarrow [0,\sqrt{4}]=R_f$

ج) تعریف $\rightarrow$ برد: $\mathbb{R} \cap [0,+\infty)$

د) ~~[illegible]~~

$\log$ (+عدد) $\rightsquigarrow \mathbb{R}$

الف) $y=\frac{1+3x}{-6+2x}$ $x=-\frac{-6y-1}{2y-3}$ $x=\frac{6y+1}{2y-3}$ $y=\mathbb{R}-\left\{\frac{3}{2}\right\}$

ب) $y=\frac{1+4x}{-2+x}$ $x=-\frac{-2y-1}{+y-4}=\frac{2y+1}{y-4}\geq 0$ $\begin{array}{ccccc} & -\frac{1}{2} & & 4 & \\ + & | & - & | & + \end{array}$ $y=\left(-\infty,-\frac{1}{2}\right]\cup(4,+\infty)$

ج) $y=\sqrt{x^2+3}+\frac{1}{\sqrt{x^2+3}}$ x^2 نامنفی $\rightarrow$ $y=\left[\sqrt{3}+\frac{1}{\sqrt{3}},+\infty\right) \rightsquigarrow y=\left[\frac{\overset{4}{3+1}}{\sqrt{3}},+\infty\right)$

حداقل ۲ است

د) $y=x^2+4+\frac{1}{x^2+4}-4 \rightsquigarrow R_f=[-2,+\infty)$

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روش اصلی:

$y=\frac{3x^2+4}{x^2-1}$ $x^2=-\frac{-y-4}{y-3}=\frac{y+4}{y-3}$ $\begin{array}{ccccc} & -4 & & 3 & \\ + & | & - & | & + \end{array}$

$y=(-\infty,-4]\cup(3,+\infty)$

روش ۲ = [illegible]

$x^2=\square \nearrow 0 \rightarrow -4$

$\searrow +\infty \rightsquigarrow 3$

$R_f=(-\infty,-4]\cup(3,+\infty)$

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$y=\frac{-1+2\sin x}{3+\sin x}$ $\sin x=-\frac{3y+1}{y-2}=\frac{-3y-1}{y-2}$ $-1\leq\frac{-3y-1}{y-2}\leq 1$

$0\leq\frac{\overset{-2y-3}{\cancel{-3y-1+y-2}}}{y-2}$ $\begin{array}{ccccc} & -\frac{3}{2} & & 2 & \\ - & | & + & | & - \end{array}$

$\frac{\overset{-4y+1}{\cancel{-3y-1-y+2}}}{y-2}\geq 0$ $\begin{array}{ccccc} & \frac{1}{4} & & 2 & \\ - & | & + & | & - \end{array}$

$\left[-\frac{3}{2},\frac{1}{4}\right]$ اشتراک

روش ۲ = $\sin x=-1$ $\frac{-1-2}{3-1}=-\frac{3}{2}$

$\sin x=1$ $\frac{-1+2}{3+1}=\frac{1}{4}$ $\longrightarrow$ $\left[-\frac{3}{2},\frac{1}{4}\right]=R_f$

چون تابع [illegible] بود

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$f(x)=\frac{x^2-x+\frac{1}{4}}{x^2-x+1}$ دامنه D ، $x^2-x+1\neq 0$ D = R

$\Delta=b^2-4ac=1-4<0 \rightsquigarrow$ مخرج هیچ وقت ۰ نخواهد شد

برد →

برد = $(-\infty,1]\cup[4,+\infty)$ $\underset{+\quad 1\quad -\quad 4\quad +}{}$

$yx^2-yx+1=x^2-x+\frac{1}{4}$

$(y-1)x^2+(-y+1)x+\frac{3}{4}=0$ $\Delta>0$ → $\underbrace{y^2+1-2y}_{(y-1)^2}-\cancel{4}(\frac{3}{\cancel{4}})(y-1)>0$

$(y-1)(\overset{y-4}{\cancel{y-1-3}})>0$

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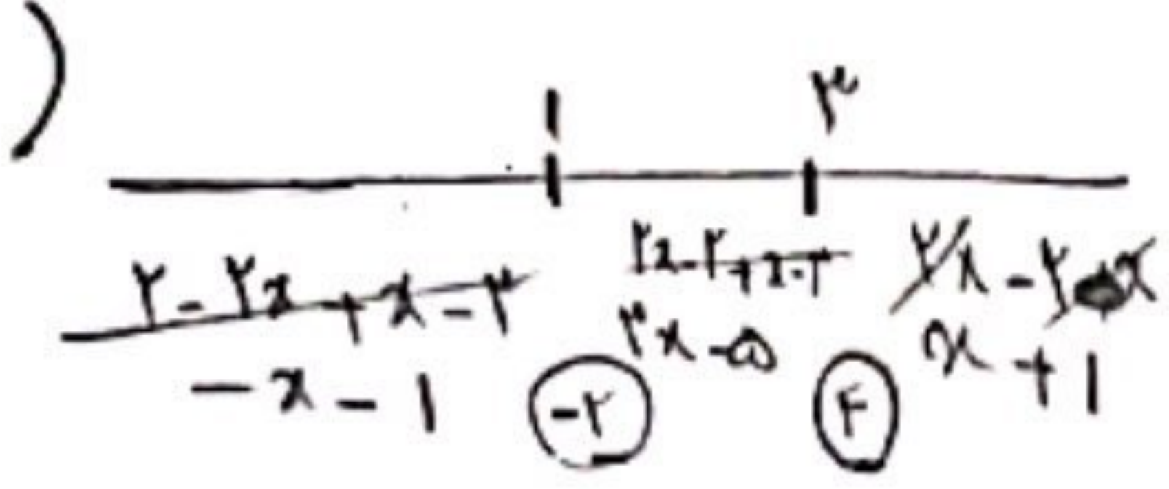
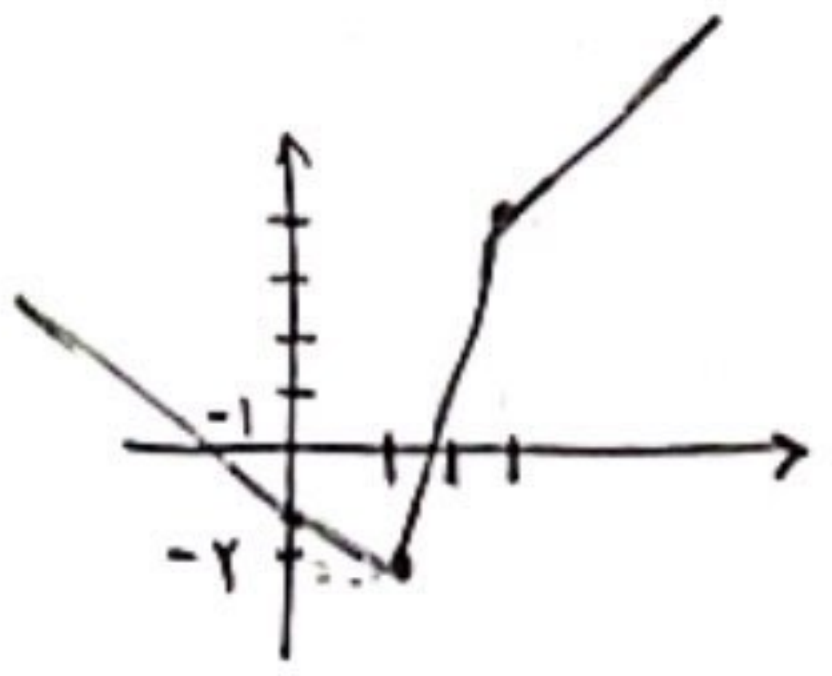
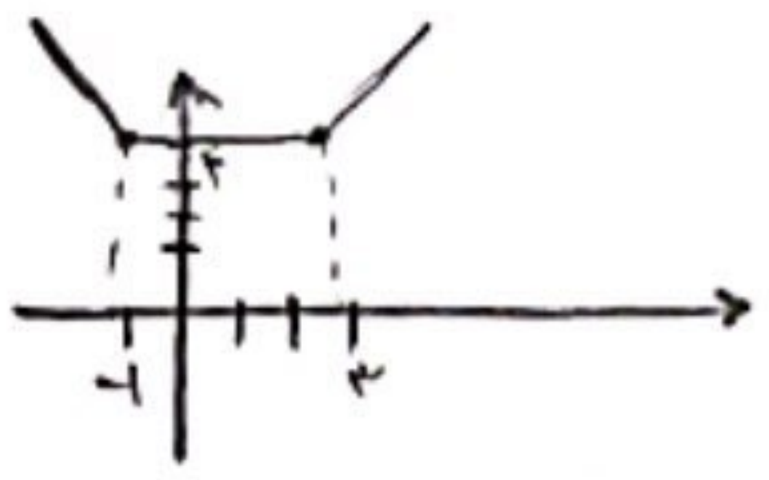
الف)





برد = $[-2,+\infty)$

ب) [illegible] است →



برد = $[4,+\infty)$

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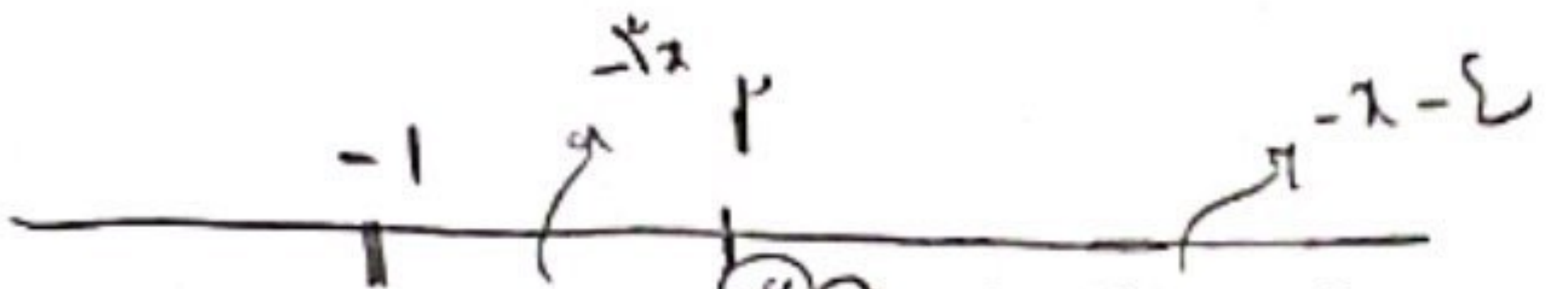
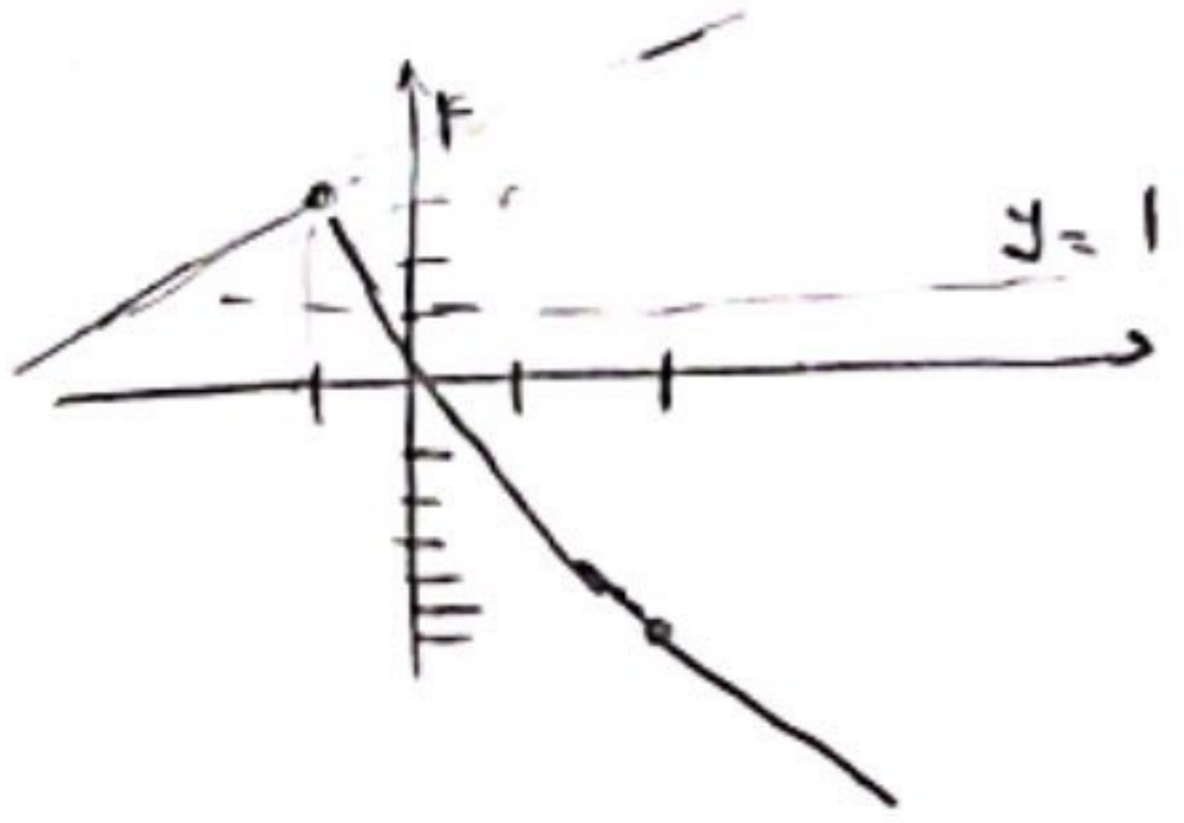


$2-x+2x+2$ (۴) $2-x-2x-2\le1$ (-۴) $x-2-2x-2\le1$

$x+4\le1$ $-3x\le1$ $-x\le5$

$\boxed{x\le-3}$ ✓ $x\le-\frac{1}{3}$ $x\ge-5$

جواب = $(-\infty,-3)\cup(-\frac{1}{3},+\infty)$



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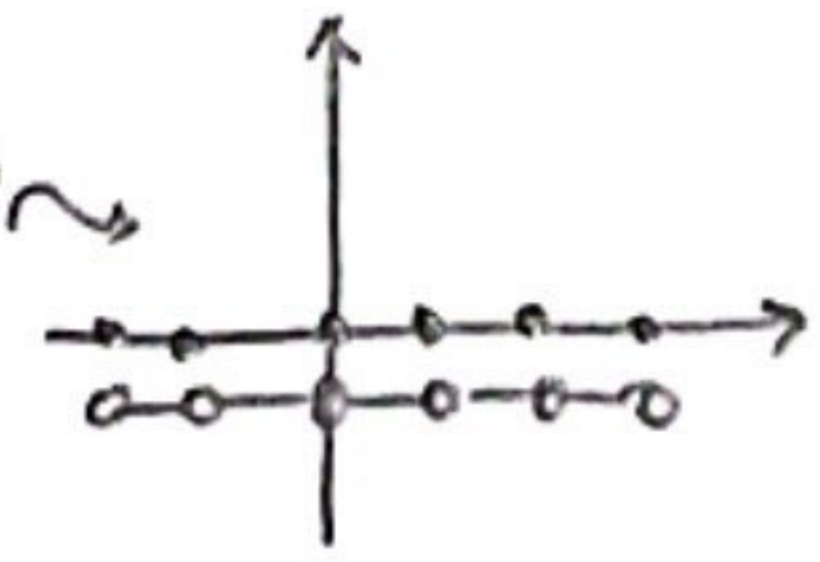
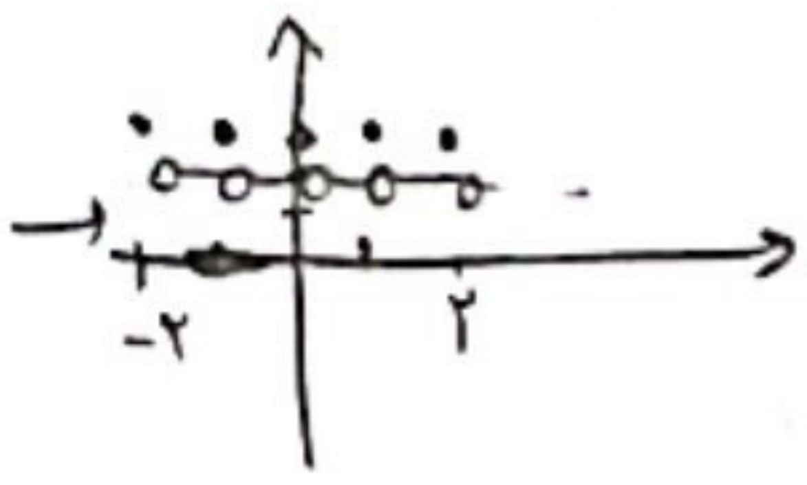
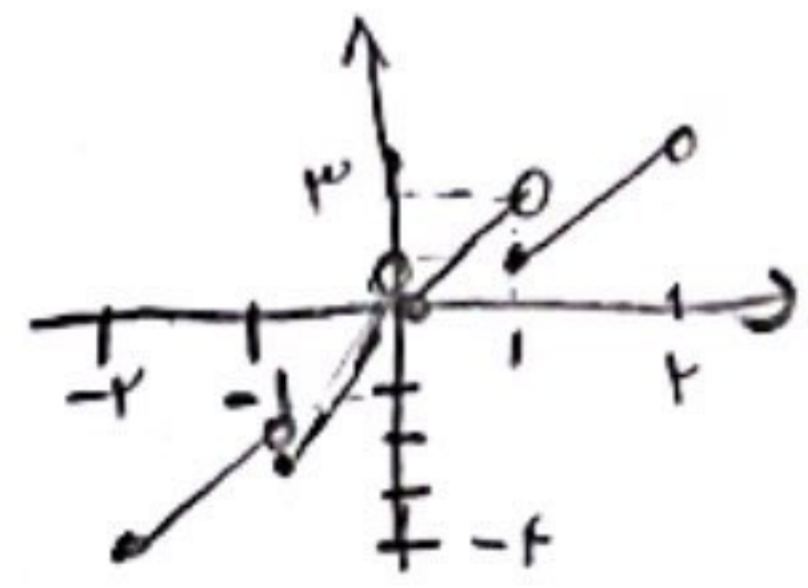
الف) $y=[x]+[-x]+3$ $\overset{\text{فرد}}{[x]+[-x]}\rightsquigarrow$

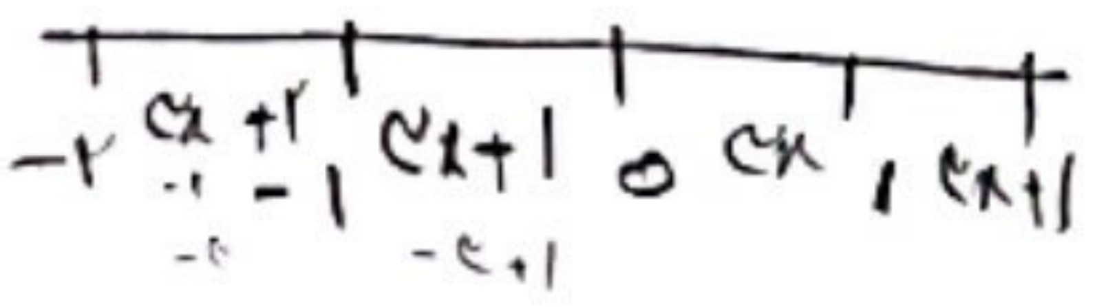




برد = $\{2,3\}$

ب) $3x-[x]$





برد تابع در کل = R

$[-4,7]$ ← برد تابع در $[-2,2]$

منظور سوال را متوجه نشدم

نمودار تابع در کل فواصل

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الف) $y=\sin^2x-\sin x+1 \xrightarrow{\boxed{\uparrow}} 1-1+1=①$

$\xrightarrow[\boxed{\downarrow}]{} +1+1+1=③$

$\frac{-b}{2a} \rightarrow -(\frac{-1}{2})=\frac{1}{2} \rightsquigarrow \frac{1}{4}-\frac{1}{2}+1=\frac{3}{4}$

برد = $[\frac{3}{4},3]$

ب) $\sin^2x=\square \xrightarrow{\boxed{\uparrow}} \sin^2x=1$ $1+1+1=3$

$\xrightarrow{\boxed{\downarrow}} \sin^2x=0$ $0+0+1=1$ برد = $[1,3]$

$\frac{-b}{2a}$ $\frac{-1}{2}$ × قابل قبول نیست