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

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$\frac{1}{x-1} = \underbrace{|x-1|}_{\pm(x-1)}$

$\to \frac{1}{x-1} = x-1 \to x^2-2x+1=1 \to x=0\,,\,2$

$\to \frac{1}{x-1} = -(x-1) \to -x^2+2x-1=1 \xrightarrow{\Delta<0} x$ غ ق ق

$\Longrightarrow x=0 \to -1 \neq 1$ ✗

$x=2 \to \frac{1}{1}=1$ ✓ $\Longrightarrow x=2$

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الف) $-2 < \frac{2x-1}{x} < 2 \to \begin{cases} \frac{2x-1}{x} - 2 < 0 \to -\frac{1}{x} < 0 \to \frac{1}{x} > 0 \to x>0 \\ 0 < \frac{2x-1}{x} + 2 \to \frac{4x-1}{x} > 0 \to \begin{array}{c|c|c|c} & 0 & \frac{1}{4} & \\ + & & - & + \end{array} \end{cases} \xrightarrow{\cap}$

$\Longrightarrow x = (\frac{1}{4}, +\infty)$

ب) $\left|\frac{x-2}{2x+1}\right| > 1 \to \begin{cases} \frac{x-2}{2x+1} > 1 \to \frac{-x-3}{2x+1} > 0 \to \begin{array}{c|c|c|c} & -3 & -\frac{1}{2} & \\ - & + & & - \end{array} \\ \frac{x-2}{2x+1} < -1 \to \frac{3x-1}{2x+1} < 0 \quad \begin{array}{c|c|c|c} & -\frac{1}{2} & \frac{1}{3} & \\ + & - & & + \end{array} \end{cases}$

$\Longrightarrow x = (-3, -\frac{1}{2}) \cup (-\frac{1}{2}, \frac{1}{3})$

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$x^2 < |x+6| \to \begin{cases} x^2 < x+6 \to x^2-x-6<0 \to \begin{array}{c|c|c|c} & -2 & 3 & \\ + & - & & + \end{array} \\ -(x+6) < x^2 \to x^2+x+6 < 0 \to \Delta<0\,,\, a>0 \Rightarrow \text{همواره } + \end{cases}$

غ ق ق ✗ $\Leftarrow$ $x: (-2, 3) \Longleftarrow$

$\Longrightarrow -\beta < x-\alpha < \beta \to \begin{cases} -\beta+\alpha = -2 \\ \beta+\alpha = 3 \end{cases} \to \alpha = \frac{1}{2}\,,\, \beta = 2{,}5$

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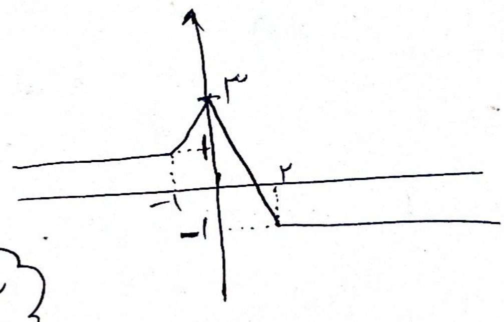
$y = |x+1| - |2x| + |x-2|$

$\to \begin{array}{c|c|c|c|c} & -1 & 0 & 2 & \\ 1 & & 2x+3 & -2x+3 & -1 \end{array}$



$\Longrightarrow \begin{cases} max = 3 \\ min = -1 \end{cases} \to 3+(-1) = 2$

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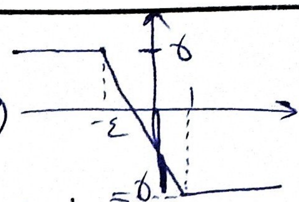
$y = \left|\frac{1}{2}x\right| - 2 \xrightarrow{\text{۴ واحد چپ}} y = \left|\frac{1}{2}(x+4)\right| - 2 \xrightarrow{\text{۱ واحد بالا}} y = \left|\frac{1}{2}(x+4)\right| - 2 + 1 \Rightarrow y = \left|\frac{1}{2}(x+4)\right| - 1$

$\Longrightarrow$ محل تقاطع: $\left|\frac{1}{2}x\right| - 2 = \left|\frac{1}{2}x + 2\right| - 1 \to \left|\frac{1}{2}x\right| - 2 = \left|\frac{1}{2}x\right| + 1$

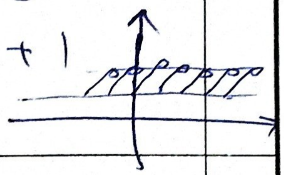
$\Longrightarrow \begin{cases} -\frac{1}{2}x - 2 = \frac{1}{2}x + 1 \xrightarrow{\left|\frac{1}{2}x\right|+1} x = -3 \to y = -\frac{1}{2} \\ \frac{1}{2}x - 2 = -\frac{1}{2}x - 1 \longrightarrow x = +1 \end{cases}$ $\quad (-3, -\frac{1}{2})$

الف) $f(x)=[|1-x|-|x+4|] \Longrightarrow y=(|1-x|-|x+4|) \xrightarrow{\text{شکل}}$: آبشاری

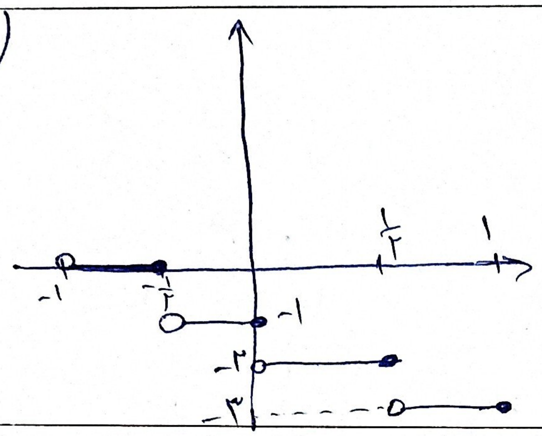


$\Longrightarrow [\text{نمودار}] = [\text{برد}] = [\underbrace{[-5,5]}_{\text{بازه}}] = \{\pm5, \pm4, \pm3, \pm2, \pm1, 0\}$ ۶

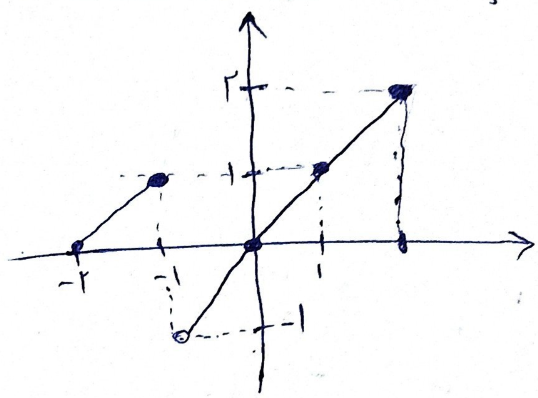
ب) $\frac{1}{x}-\left[\frac{x+1}{x}\right] \longrightarrow \frac{1}{x}-\left[1+\frac{1}{x}\right] = \frac{1}{x}-\left[\frac{1}{x}\right]+1 \longrightarrow \bigcirc - [\bigcirc] + 1$



الف)



ب)



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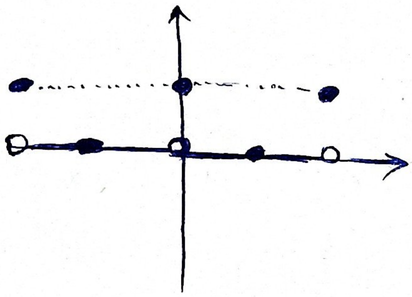
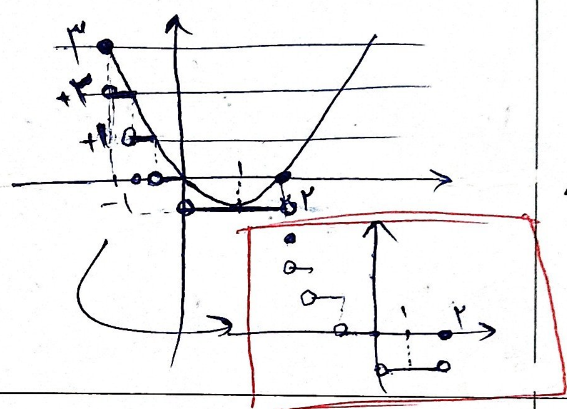
الف)



ب) $[-1,2]$

x^2-2x



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$a+[b]=4{,}2 \longrightarrow a=x{,}2$

$b-[a]=2{,}4 \longrightarrow b=x{,}4$

$a+b+[b]-[a]=6{,}6$

$\left.\begin{array}{l} a=[a]+0{,}2 \\ b=[b]+0{,}4 \end{array}\right\} \longrightarrow a+b=[a]+[b]+0{,}6$ ۹

$\cancel{[a]}+[b]+0{,}6+[b]-\cancel{[a]}=6{,}6 \longrightarrow [b]=3 \longrightarrow b=3{,}4$

$\Longrightarrow [a]=1 \longrightarrow a=1{,}2 \qquad a+b=4{,}6$

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جواب = ۱۹۷