

شماره زوجی ندارد

$$x-1 \geq 0 \rightarrow x \geq 1 \rightarrow \frac{1}{x-1} = x-1 \rightarrow x^2 - x + 1 = 1 \rightarrow x(x-2) = 0$$

$x=0$ غلط
 $x=2$ صحیح

$$x-1 = 0 \text{ صحیح}$$

$$x-1 < 0 \rightarrow \frac{1}{x-1} = x+1 \Rightarrow -x^2 - 1 + 2x = 1 \rightarrow x^2 - 2x + 2 = 0 \rightarrow \Delta < 0$$

ندارد

$\rightarrow x=2$ (صحیح)

$\log_{\frac{1}{2}} = \frac{1}{2} > 0$

$\frac{x-1}{x}$ $\frac{1-x}{x}$ $\frac{x-1}{x}$	$\frac{x-1}{x}$ $\frac{1-x}{x}$ $\frac{x-1}{x}$	$\frac{x-1}{x}$ $\frac{1-x}{x}$ $\frac{x-1}{x}$
①	②	③

①: $\frac{x-1}{x} < 2 \rightarrow \checkmark (-\infty, 0)$
 ②: $\frac{1-x}{x} < 2 \rightarrow 1 < 2x \rightarrow \frac{1}{2} < x < \frac{1}{2}$
 ③: $\frac{x-1}{x} < 2 \rightarrow \checkmark [\frac{1}{2}, +\infty)$

$\cup \rightarrow (-\infty, 0) \cup (\frac{1}{2}, +\infty)$

$\frac{x-2}{x+1} \rightarrow \log_{\frac{1}{2}} = 2, -\frac{1}{2}$

$\frac{x-2}{x+1}$ $\frac{x-2}{x+1}$ $\frac{x-2}{x+1}$	$\frac{x-2}{x+1}$ $\frac{x-2}{x+1}$ $\frac{x-2}{x+1}$	$\frac{x-2}{x+1}$ $\frac{x-2}{x+1}$ $\frac{x-2}{x+1}$
①	②	③

①: $\frac{x-2}{x+1} > 2 \rightarrow x-2 > 2x+1 \rightarrow x < -3 \rightarrow (-\infty, -3)$
 ②: $\frac{x-2}{x+1} > 2 \rightarrow x-2 > 2x+1 \rightarrow x < -3 \rightarrow (-\infty, -3)$
 ③: $\frac{x-2}{x+1} > 2 \rightarrow x-2 > 2x+1 \rightarrow x < -3 \rightarrow (-\infty, -3)$

$\cup \rightarrow (-\infty, -3) \cup (-\frac{1}{2}, \frac{1}{2})$

$$x+2 \geq 0 \rightarrow x^2 \leq x+2 \rightarrow x^2 - x - 2 < 0 \rightarrow (x+2)(x-3) < 0 \rightarrow \frac{-2}{+} \frac{3}{-} \rightarrow (-2, 3)$$

$$x+2 < 0 \rightarrow x^2 < -x-2 \rightarrow x^2 + x + 2 < 0 \rightarrow \Delta < 0 \rightarrow \text{ندارد}$$

$$\frac{(-2) + (3)}{2} = \frac{1}{2} \rightarrow |x - \frac{1}{2}| < \beta \xrightarrow{x=3} \beta = \frac{5}{2} \rightarrow |x - \frac{1}{2}| < \frac{5}{2}$$

$\rightarrow \alpha = \frac{1}{2}$

$\log_{\frac{1}{2}} = -1, 0, 2$

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

①: 1
 ②: $(1, 3)$
 ③: $(-1, 3)$
 ④: -1

$\min = -1$
 $\max = 3$
 $3 + (-1) = 2$

$$|\frac{1}{2}x| - 2 \xrightarrow{\text{اولی}} |\frac{1}{2}x + 2| - 2 \xrightarrow{\text{دوم}} |\frac{1}{2}x + 2| - 1$$

$$|\frac{1}{2}x| - 2 = |\frac{1}{2}x + 2| - 1$$

$\rightarrow x \geq 0 \rightarrow -\frac{x}{2} - 2 = \frac{1}{2}x + 2 - 1 \rightarrow -\frac{x}{2} - 2 = \frac{1}{2}x + 1 \rightarrow -2 = x$
 $\rightarrow x = -2$

$\rightarrow x < 0 \rightarrow \frac{1}{2}x - 2 = \frac{1}{2}x + 2 - 1 \rightarrow \frac{1}{2}x - 2 = \frac{1}{2}x + 1 \rightarrow -2 = 1$
 $\rightarrow \text{غلط}$

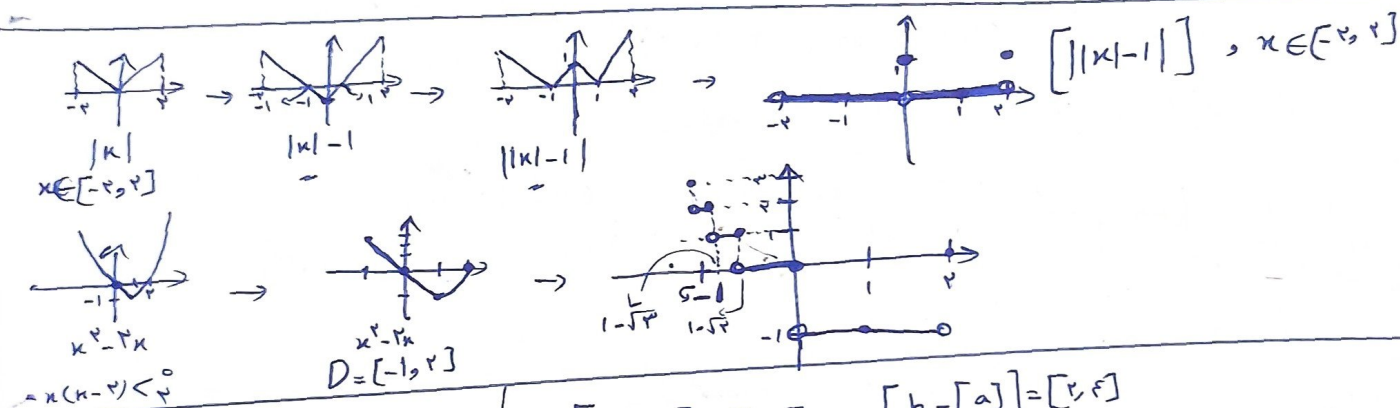
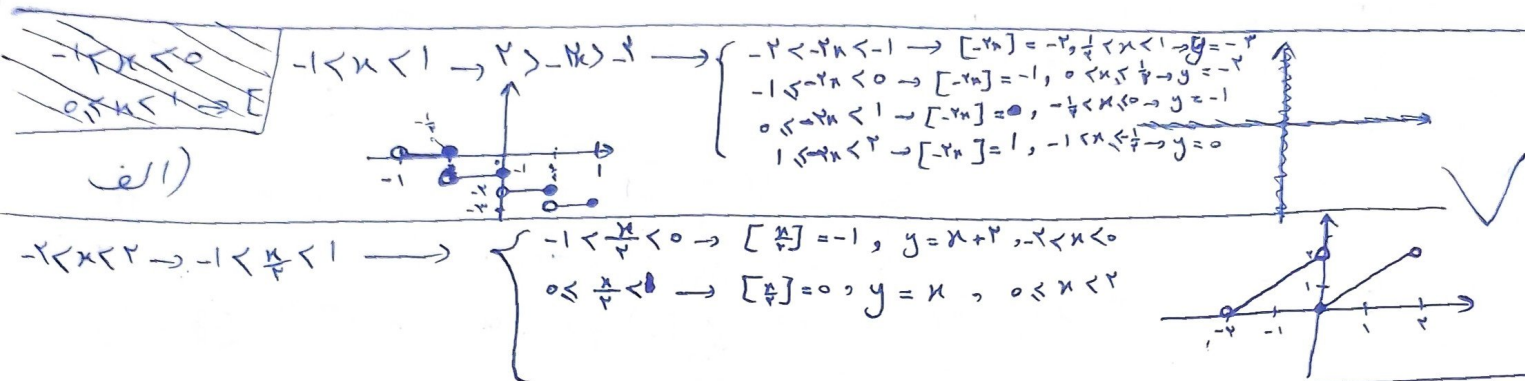
$\rightarrow x < -4 \rightarrow -\frac{x}{2} - 2 = -\frac{x}{2} - 2 - 1 \rightarrow -2 = -3$
 $\rightarrow \text{غلط}$

$x = -2$

$$\begin{aligned}
 1 < x &\rightarrow [x-1-x-3] = [-\omega] = (-\omega) \text{ (1)} \\
 -1 < x < 1 &\rightarrow [1-x-x-3] = [-2x] = -2 \\
 x < -1 &\rightarrow [-x+1+x+3] = [4] = (4) \text{ (3)}
 \end{aligned}$$

$x = -1 \rightarrow y = 1-3 = -2$
 $x = 1 \rightarrow y = -\omega$
 (2) $[-\omega, \omega]$

$$(1) \cup (2) \cup (3) = [-\omega, \omega] \rightarrow \boxed{R = [-\omega, \omega]}$$



$[a] + [b] = [a+b]$
 $[a] + [b] = 1, [b] - [a] = 2 \rightarrow 2[b] = 3 \rightarrow [b] = 1.5, [a] = 1$
 $b - [a] = 1.5 \rightarrow b = 1.5 + 1 = 2.5$
 $a + b = 1 + 2.5 = 3.5$

$$(1+\sqrt{2})^2 = 3+2\sqrt{2}, (1-\sqrt{2})^2 = 3-2\sqrt{2} \Rightarrow ((1+\sqrt{2})^2)^3 + ((1-\sqrt{2})^2)^3 = (3+2\sqrt{2})^3 + (3-2\sqrt{2})^3 = 198$$

$$(1+\sqrt{2})^4 + (1-\sqrt{2})^4 = (1+\sqrt{2})^2 + (1-\sqrt{2})^2 = 6$$

$$(1+\sqrt{2})^4 + (1-\sqrt{2})^4 = 198 \rightarrow \sqrt{2} = 1.4 \rightarrow (1+\sqrt{2})^4 = 198 - (-1.4)^4 \approx 198, 198 - (-1.4)^4 \approx 198$$

$$\rightarrow 198 < (1+\sqrt{2})^4 < 198 \rightarrow \boxed{[1+\sqrt{2}]^4 = 198}$$