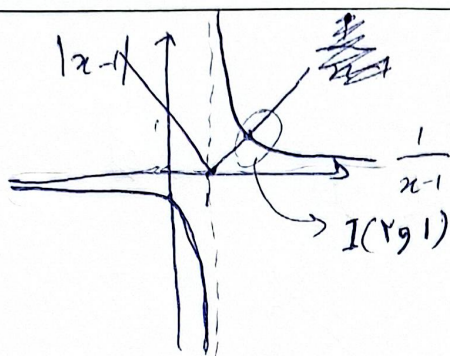


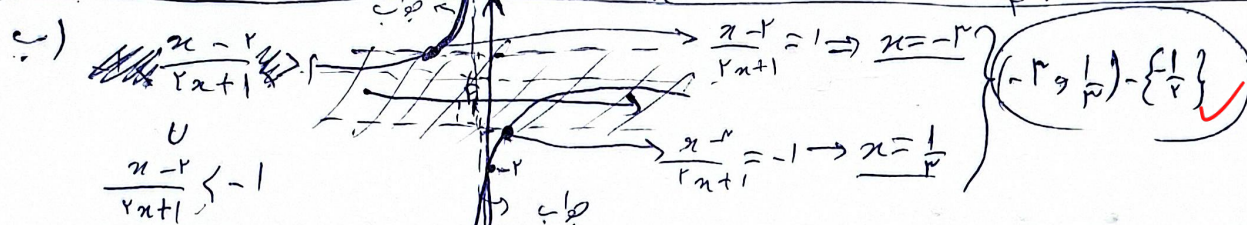


ارزش دارد ✓

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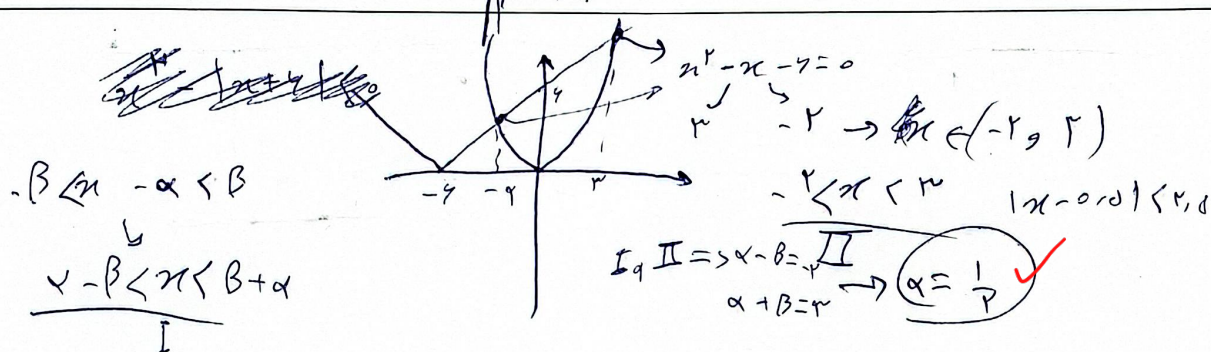
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الف) $2 < \frac{x-1}{x} < 2 \rightarrow -2 < 2 - \frac{1}{x} < 2$ $\xrightarrow{x \neq 0} -4 < -\frac{1}{x} < 0 \rightarrow 4 > \frac{1}{x} > 0 \Rightarrow \frac{1}{4} < x < \infty$ $\Rightarrow x \in (\frac{1}{4}, \infty)$



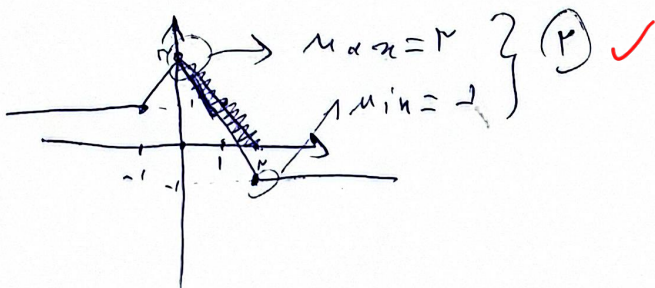
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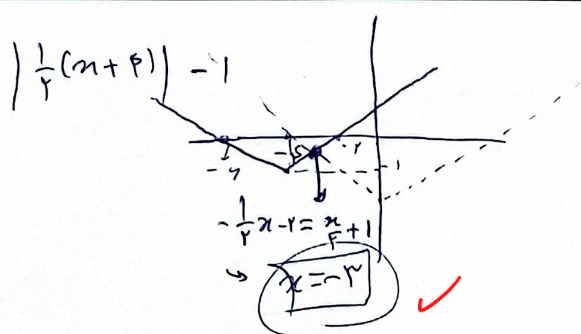
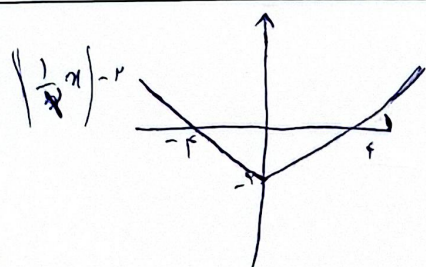
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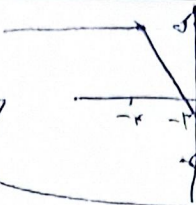
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$$a) f_1(x) = |1-x| - |x+4|$$



$$[f_1(x)] \in \{-2, -1, 0, 1, 2\}$$

2

8

$$b) f_2(x) = \frac{1}{x} - \left[\frac{x+1}{x} \right] \rightarrow 1 + \left(\frac{1}{x} - \left[\frac{1}{x} \right] \right)$$

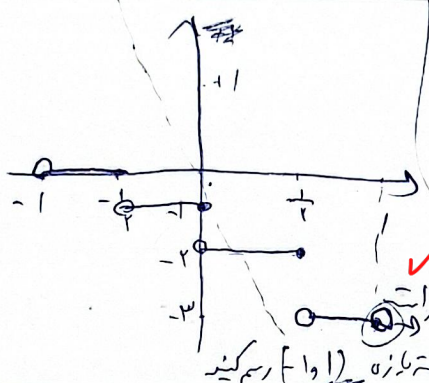
$$\frac{1}{x} - \left[\frac{1}{x} \right] = \{0, 1\}$$

$$R_{f_2} = [0, 1]$$

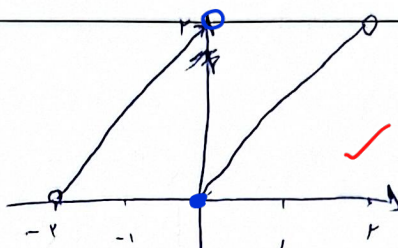
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7

د) 1)



ب) 1)



چون فته بازه (1, 1) را رسم کنی

2

1

$$a + [k] = r, r \rightarrow a = k + 0, r$$

$$b - [a] = r, r \rightarrow b = k_r + 0, r$$

$$a + [b] = a + k_r = r, r \Rightarrow a + b = a + k + 0, r = (r, r)$$

2

9

$$(1 + \sqrt{r})(1 - \sqrt{r}) = -1 \rightarrow [1, -1 + \sqrt{r}] \neq [1, 1] = ?$$

$$[1, 1] = \frac{1}{t_1} + \frac{1}{t_2} = 1, 1 \rightarrow t_1^2 - 191t_1 + 1 = 0$$

$$t_2 = \frac{1}{t_1} \rightarrow t_2^2 - 191t_2 + 1 = 0$$

$$t_1 = \frac{191 + \sqrt{191^2 - 4}}{2} = 99 + \sqrt{99^2 - 1} = 99 + \sqrt{9800}$$

$$[t_1] = [99 + 10\sqrt{98}] = 99 + [10\sqrt{98}] \Rightarrow 99 + 98 = 197$$

2

10