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

عدد ۱

1

$$\frac{1}{x-1} = -x+1 \rightarrow -x^2 + 2x - 1 = 1 \rightarrow -x^2 + 2x - 2 = 0 \rightarrow \Delta = 4 - 1 = 3 \rightarrow \Delta < 0$$

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$$\frac{x-1}{x} < 2 \rightarrow \frac{x-1-2x}{x} < 0 \rightarrow \frac{-x-1}{x} < 0 \rightarrow \frac{1}{x} > 0 \rightarrow x > 0 \quad I$$

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

$$I \cap II = (\frac{1}{3}, +\infty)$$

2

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

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

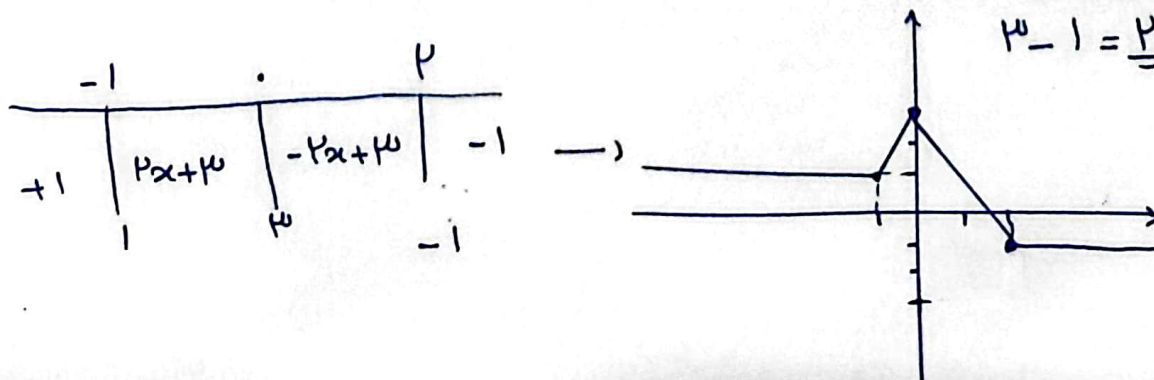
$$I \cup II = (-\infty, -\frac{1}{3}) \cup (-\frac{1}{3}, \frac{1}{2})$$

$$x^2 < x+6 \rightarrow x^2 - x - 6 < 0 \rightarrow \frac{-1 \pm \sqrt{1+24}}{2} = \frac{-1 \pm 5}{2} \rightarrow x < -2 \text{ or } x < 3 \rightarrow \Delta < 0$$

3

$$|x - \frac{1}{p}| < \frac{a}{p} \rightarrow x = \frac{1}{p} \quad \beta = \frac{a}{p}$$

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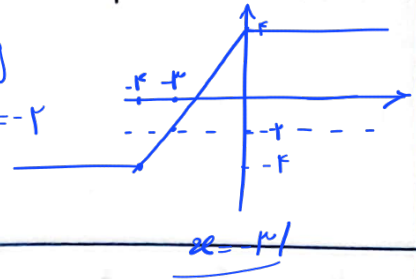
4

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$$|\frac{1}{p}x + k| - 1 = y \rightarrow |\frac{1}{p}x| - 1 = |\frac{1}{p}x + k| - 1 \rightarrow |\frac{1}{p}x| - 1 = |\frac{1}{p}x + k| \quad 5$$

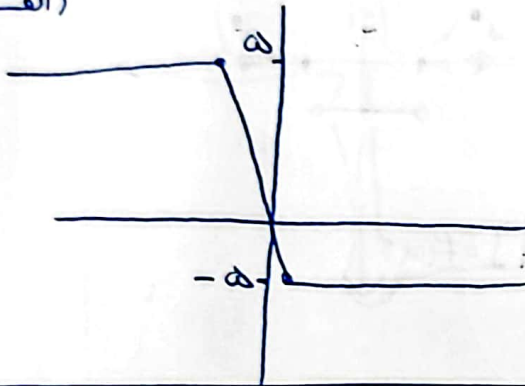
$$\frac{1}{p}x - 1 = \frac{1}{p}x + k \rightarrow -1 \neq k \quad \text{ع} \quad y = |\frac{1}{p}x + k| - 1 = y$$

$$|u + k| - |u| = -k$$



$$-\frac{1}{p}x - 1 = \frac{1}{p}x + k \rightarrow x = -\omega$$

الف)



$$\xrightarrow{\text{النت}} R_f = \{-\omega, -k, -1, \dots, 1, k, \omega\}$$

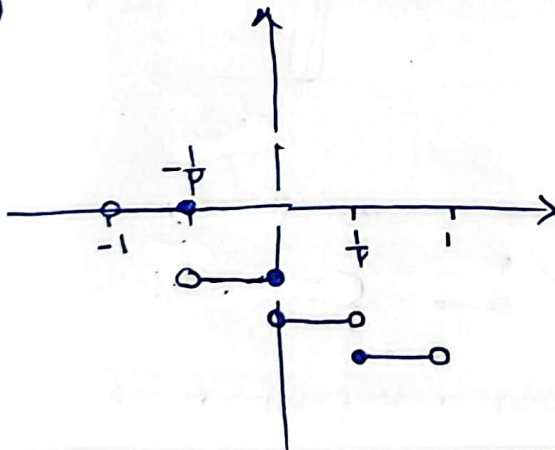
$$-2, -1, \dots, 1, 2 \quad 5$$

6

$$\text{ب) } \frac{1}{x} - [1 + \frac{1}{x}] \rightarrow \frac{1}{x} - [\frac{1}{x}] - 1 = y \rightarrow -1 \leq \frac{1}{x} - [\frac{1}{x}] < 1 \rightarrow$$

$$-1 \leq \frac{1}{x} - [\frac{1}{x}] + 1 < 2 \rightarrow [-1, 1) = R_f$$

الف)



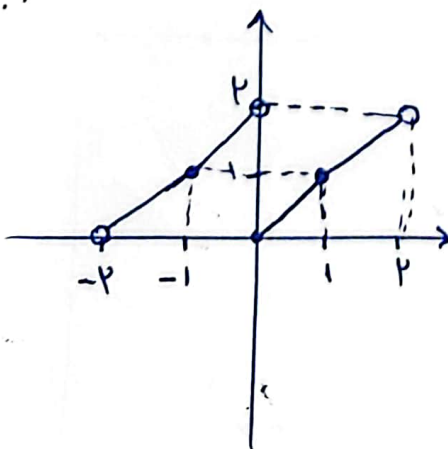
$$(-1, 0) \rightarrow x + 1 = 1$$

$$[0, 1) \rightarrow -1$$

5

7

ب)



$$(-2, -1) \rightarrow x + 2$$

$$[-1, 0) \rightarrow x + 2$$

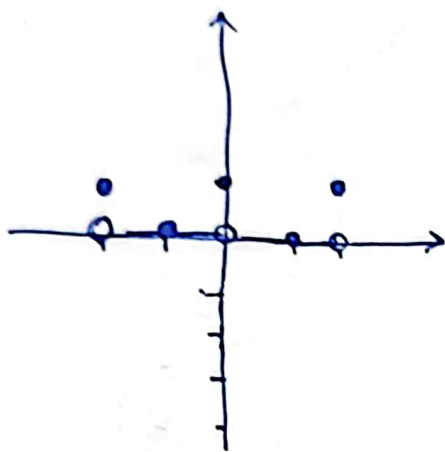
$$[0, 1) \rightarrow x$$

$$[1, 2) \rightarrow x$$

$$[x-1] = f(x)$$

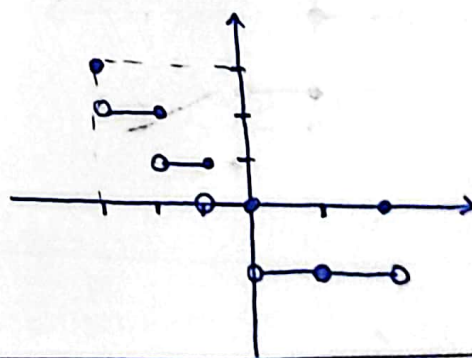
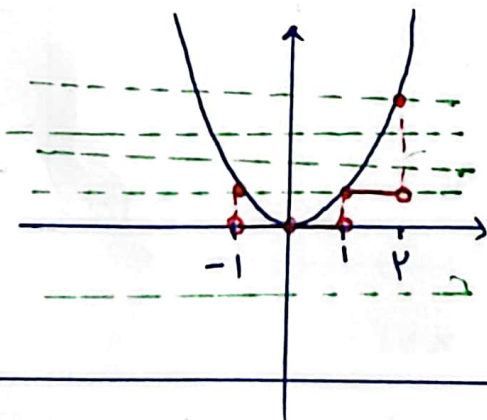
$$[-1, 1]$$

8



(5)

$$y = x^2 - 1$$



$$b - [a] = 1/4 \rightarrow .14$$

$$a = 1/4$$

$$b = 1/4$$

$$\rightarrow a + b = 1/2$$

সুইডো!

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$$(1+\sqrt{P})^9 = 19\lambda - (1-\sqrt{P})^9 \Rightarrow 19\lambda - [(1-\sqrt{P})^9]^{10} = 19\lambda - [10 - 10\sqrt{P}]^{10}$$

$$19\lambda - [10 + 10\sqrt{P} - 10\sqrt{P} - 10\sqrt{P}] = 19\lambda - [10 - 10\sqrt{P}] \Rightarrow$$

10

$$19\lambda - 10 + 10\sqrt{P} = 19\lambda - 10 \Rightarrow [10\sqrt{P}/10] = 10\sqrt{P}$$

⑤