

19, 20

آرشداد یارسی / یازدهم دفتر A / تالیف شهاب ۲۰

$$\frac{1}{x-1} = 1-x$$

$$-x^2 + 2x - 2 = 0$$

 $\Delta < 0$
ریشه ندارد

$$\frac{1}{x-1} = x-1$$

$$x^2 - 2x = 0$$

$$x = 0 \rightarrow \text{غیر قابل قبول} \rightarrow x > 1$$

$$\boxed{x=2}$$

نقطه یک ریشه $x=2$ دارد.

$$\text{الف) } \left| \frac{x-1}{x} \right| < 2 \rightarrow |x-1| < 2|x| \rightarrow (x-1)^2 < 4x^2$$

$$\rightarrow 4x^2 - 2x + 1 < 4x^2 \rightarrow -2x + 1 < 0 \rightarrow x > \frac{1}{2}, x \neq 0 \rightarrow \text{مجموعه جواب: } (\frac{1}{2}, +\infty)$$

$$\text{ب) } \left| \frac{x-2}{x+1} \right| > 1 \rightarrow |x-2| > |x+1| \rightarrow (x-2)^2 > (x+1)^2$$

$$\rightarrow x^2 - 4x + 4 > x^2 + 2x + 1 \rightarrow 0 > 2x^2 + 6x - 3 \rightarrow x = -3, x = \frac{1}{2}$$

$$\rightarrow \begin{array}{c|c} -3 & \frac{1}{2} \\ \hline + & - \end{array} \rightarrow (-3, \frac{1}{2}) \quad \text{①} \quad x+1 \neq 0 \rightarrow x \neq -1 \rightarrow x \neq \frac{-1}{2} \quad \text{②}$$

$$\text{①} \cap \text{②} = (-3, \frac{-1}{2}) \cup (\frac{-1}{2}, \frac{1}{2})$$

$$x^2 < |x+4| \rightarrow x+4 > x^2 \rightarrow x^2 - x - 4 < 0 \rightarrow x=2, x=-2 \rightarrow \begin{array}{c|c} -2 & 2 \\ \hline + & - \end{array} \rightarrow (-2, 2)$$

$$\rightarrow x+4 < x^2 \rightarrow x^2 - x - 4 < 0 \rightarrow \Delta < 0 \rightarrow \text{ریشه ندارد} \rightarrow \text{همیشه مثبت}$$

$$-2 < x < 2 \rightarrow -\frac{\omega}{2} < x - \frac{1}{2} < \frac{\omega}{2} \rightarrow |x - \frac{1}{2}| < \frac{\omega}{2} \rightarrow x = \frac{1}{2}$$

$$x < -1 \rightarrow y = -(x+1) + 2x - (x-2) = 1 \quad x = -1 \rightarrow y = -2 + 3 = 1$$

$$-1 < x < 0 \rightarrow y = (x+1) + 2x - (x-2) = 2x + 3 \quad x=0 \rightarrow y = 1 + 2 = 3$$

$$0 < x < 2 \rightarrow y = (x+1) - 2x + (x-2) = -2x + 3 \quad x=2 \rightarrow y = 3 - 4 = -1$$

$$x > 2 \rightarrow y = (x+1) - 2x + (x-2) = -1$$

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

$$y = \left| \frac{x}{r} \right| - r \xrightarrow{\quad} y = \left| \frac{n+\varepsilon}{r} \right| - r + 1 = \left| \frac{n+\varepsilon}{r} \right| - 1 \quad -\omega$$

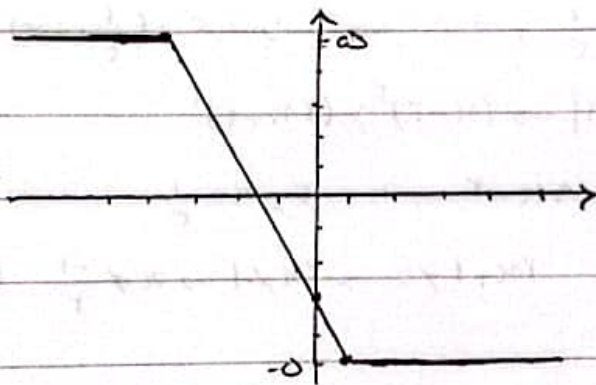
$$\left| \frac{x}{r} \right| - r = \left| \frac{n+\varepsilon}{r} \right| - 1 \rightarrow \left| \frac{x}{r} \right| = \left| \frac{n+\varepsilon}{r} \right| + 1 \rightarrow |x| = |n+\varepsilon| + r \quad (5)$$

$$x \geq 0 \rightarrow x = n + \varepsilon + r \rightarrow 0 = 0 \quad \times$$

$$-\varepsilon \leq x < 0 \rightarrow x = n + \varepsilon + r \rightarrow \boxed{x = -r} \quad \checkmark \quad \text{طول مثلث برضای } -r = \varepsilon$$

$$x < -\varepsilon \rightarrow x = -(n + \varepsilon) + r \rightarrow 0 = -r \quad \times$$

$$\text{الف) } \left| 1 - x \right| - \left| n + \varepsilon \right| \rightarrow \left| \frac{-\omega}{\omega} \right| - \left| \frac{-\varepsilon}{\omega} \right| = \left| \frac{0}{-\varepsilon} \right| - \left| \frac{1}{-\omega} \right| = \left| \frac{r}{-\omega} \right| \quad -\varepsilon$$



$$R = [-\omega, +\omega]$$

(1,0)

$$\Rightarrow f(x) = [1 - |x| - |n + \varepsilon|] \rightarrow R = \{-\omega, -\varepsilon, -r, -1, 0, 1, r, \varepsilon, \omega\}$$

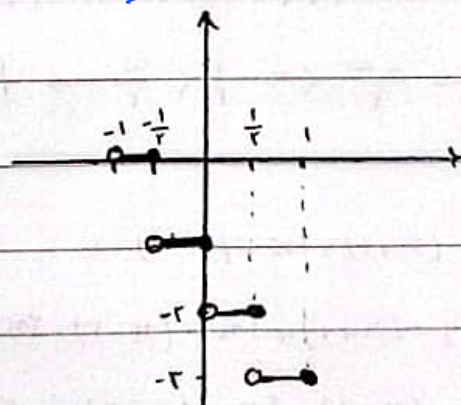
$$\text{ب) } f(x) = \frac{1}{x} - \left[\frac{n+1}{n} \right] = \frac{1}{x} - 1 - \left[\frac{1}{n} \right] \rightarrow \frac{a}{[a]} - 1 \Rightarrow R = [-r, -1] \quad (-1,0) \quad (0,1) \quad [-1,0]$$

$$\text{الف) } -1 < x < -\frac{1}{r} \rightarrow y = 1 - 1 = 0$$

$$-\frac{1}{r} < x < 0 \rightarrow y = 0 - 1 = -1$$

$$0 < x < \frac{1}{r} \rightarrow y = -1 - 1 = -2$$

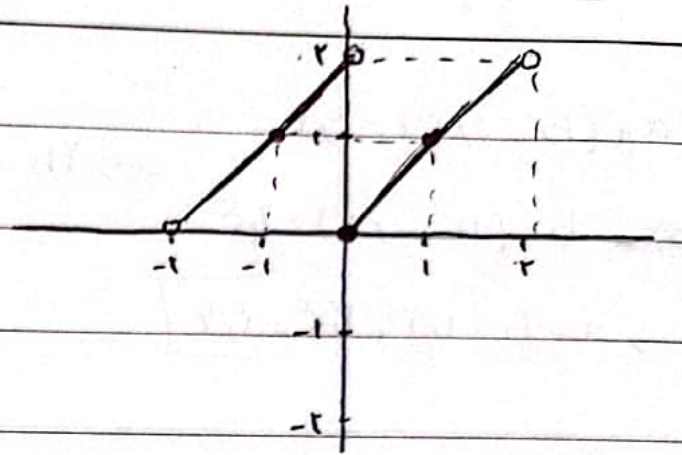
$$\frac{1}{r} < x < 1 \rightarrow y = -2 - 1 = -3$$



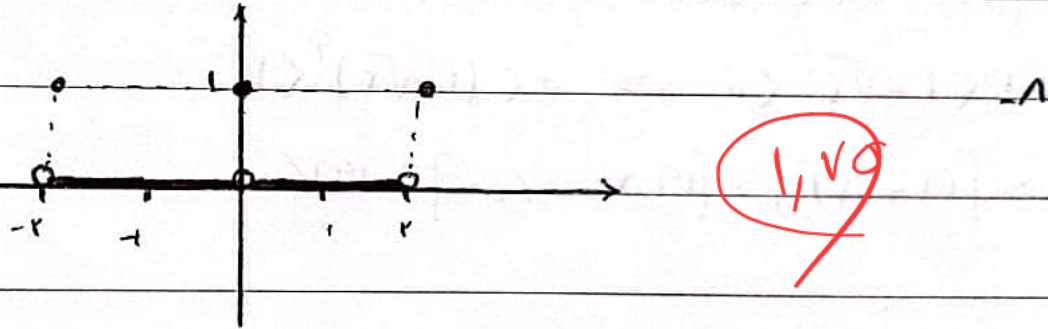
(5)

ب) $-r < a < 0 \rightarrow y = a - r(-1) = a + r$

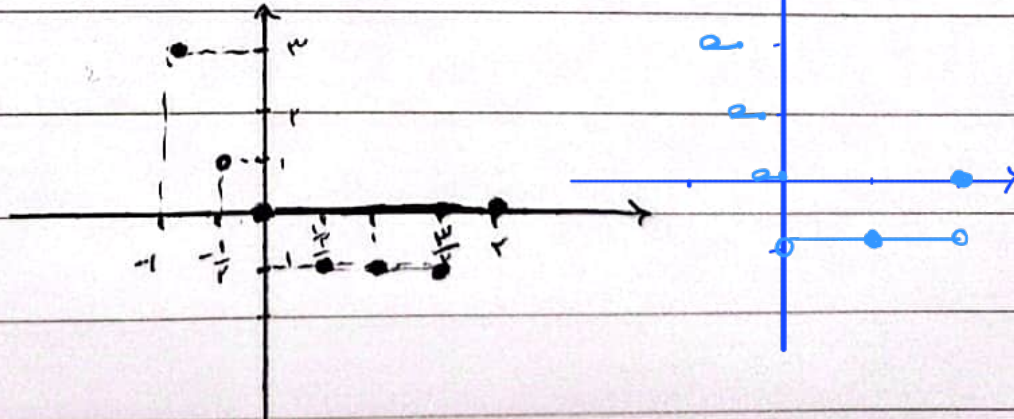
$0 \leq a < r \rightarrow y = a - r(0) = a$



الف)



ب)



Date :/...../.....



$$a + (b - 0.1\text{f}) = 8.2$$

$$\Rightarrow 2b = 9.4 + 0.12 = 9.52 \rightarrow b = 4.76 \rightarrow a = 1.2$$

-9

$$\text{b} - (a - 0.12) = 4.76$$

$$\rightarrow a + b = 1.2 + 4.76 = 5.96$$

5

$$(1 + \sqrt{r})^4 + (1 - \sqrt{r})^4 = 19\Omega \rightarrow (1 + \sqrt{r})^4 = 19\Omega - (1 - \sqrt{r})^4$$

-10

$$-1 < 1 - \sqrt{r} < 0 \Rightarrow 0 < (1 - \sqrt{r})^4 < 1$$

5

$$\Rightarrow [(1 + \sqrt{r})^4] = [19\Omega - 0.1\text{m}] = 19\text{V}$$