

تکلیف سری ۲۵

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یا: قسم B

$$\frac{1}{n-1} = u-1 \rightarrow 1 = (u-1)^2 \rightarrow u-1 = \pm 1 \rightarrow u=0 \text{ X}$$

$$\rightarrow u=2 \checkmark$$

الف) $\left| \frac{u-1}{u} \right| < 2 \rightarrow -2 < \frac{u-1}{u} < 2 \rightarrow -2 < 1 - \frac{1}{u} < 2 \rightarrow -2 < -\frac{1}{u} < 0 \rightarrow \frac{1}{u} > 0 \rightarrow u > 0 \rightarrow u > \frac{1}{2}$

ب) $\left| \frac{u-2}{u+1} \right| > 1 \rightarrow \frac{u-2}{u+1} > 1 \rightarrow \frac{u-2}{u+1} - 1 > 0 \rightarrow \frac{u-2-u-1}{u+1} = \frac{-u-3}{u+1} > 0 \rightarrow \frac{-u-3}{-1+1} \rightarrow (-3, -1)$

$\frac{u-2}{u+1} < -1 \rightarrow \frac{u-2}{u+1} + 1 < 0 \rightarrow \frac{u-2+u+1}{u+1} = \frac{2u-1}{u+1} < 0 \rightarrow \frac{-1}{-1+1} \rightarrow (-\frac{1}{2}, \frac{1}{2})$

$u^2 < |u+1| \rightarrow |u-a| < B \quad a=?$

$u+1 > u^2 \rightarrow u^2 - u - 1 > 0 \rightarrow (u-2)(u+1) > 0 \rightarrow \frac{-2}{-1+1} \rightarrow (-2, 2) \rightarrow (-2, 2) \rightarrow u-a < B \rightarrow a-B < u < a+B$

$u+1 < -u^2 \rightarrow u^2 + u + 1 < 0 \rightarrow \Delta < 0 \rightarrow \text{X}$

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

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

$u < -1 \rightarrow |u+1| = -u-1 \rightarrow -u-1 + u-2 = -3$

$-1 \leq u < 0 \rightarrow u+1+u-2 = 2u-1 \rightarrow u=0 \rightarrow y=-1$

$0 \leq u < 2 \rightarrow u+1-u-2 = -1 \rightarrow u=2 \rightarrow y=1$

$u \geq 2$

$u+1-u-2 = -1$

$\max y = 1$

$\min y = -3$

$y = \left| \frac{1}{u} - 2 \right| - \varepsilon u + 1$

$\left| \frac{1}{u} - 2 \right| = 1 \rightarrow \frac{1}{u} - 2 = 1 \rightarrow \frac{1}{u} = 3 \rightarrow u = \frac{1}{3}$

$\left| \frac{1}{u} - 2 \right| = 2 \rightarrow \frac{1}{u} - 2 = 2 \rightarrow \frac{1}{u} = 4 \rightarrow u = \frac{1}{4}$

$-\frac{1}{u} - (u+1) = 2$

$-\frac{1}{u} - u - 1 = 2 \rightarrow -\frac{1}{u} - u = 3 \rightarrow u = -1$

بازدهم سر
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امیر محمد فردوسیان

الف) $f(u) = [11 - u] - [u + 9] = 2 \Rightarrow u \leq -2 \Rightarrow 1 - u + u + 9 = 8 \Rightarrow -2 \leq u \leq 1 \Rightarrow 1 - u - u - 9 = -2u - 8 \xrightarrow{u=0} 8 \xrightarrow{u=1} -8$

$u \geq 1 \Rightarrow u - 1 - u - 9 = -8 \Rightarrow F = [-8, 8]$

ب) $f(u) = \frac{1}{u} - [u + 1] = 0 \Rightarrow [1 + \frac{1}{u}] - [-1] = -1 \Rightarrow -1$

الف) $y = [-2u] - 1 \quad u \in (-1, 1)$

$\begin{cases} -1 \leq u \leq 0 & 1 \\ 0 \leq u < 1 & -1 \end{cases}$

ب) $y = u - 2[u] \quad u \in (-2, 2)$

$\begin{cases} -2 < u < -1 \rightarrow u + 2 \\ -1 \leq u < 0 \rightarrow -u + 1 \\ 0 \leq u < 1 \rightarrow u \\ 1 \leq u < 2 \rightarrow u - 1 \end{cases}$

الف) $[|u| - 1] \rightarrow u \in [-2, 2]$

$\begin{cases} -2 \leq u < -1 & 1 \\ -1 \leq u < 0 & 0 \\ 0 \leq u < 1 & -1 \\ 1 \leq u \leq 2 & 0 \end{cases}$

ب) $y = [u^2 - 2u] \rightarrow u \in [-1, 2]$

$\begin{cases} -1 \leq u < 0 & -1 \\ 0 \leq u < 1 & 0 \\ 1 \leq u < 2 & -1 \end{cases}$

$a + [b] = 912 \quad b - [a] = 219 \quad a + b = ?$

$[b] = 2 \quad a \in 2 \quad b - [0/2] = 218 \Rightarrow b = 218$

$218 + 0/2 = 219$

$(1 + \sqrt{2})^4 + (1 - \sqrt{2})^4 = 198 \Rightarrow [1 + \sqrt{2}]^4 = ?$

$198 - (1 - \sqrt{2})^4 \Rightarrow 198 - (1 - 4\sqrt{2} + 4 - 2) = 198 - (-2 + 4\sqrt{2}) = 200 - 4\sqrt{2}$

$200 - 4\sqrt{2} < 198 \Rightarrow 198 < 200 - 4\sqrt{2} < 198 \Rightarrow 198 < (1 + \sqrt{2})^4 < 198 \Rightarrow [1 + \sqrt{2}]^4 = 198$