

یازدهم دبیر

۷, ۷۵

تکلیف ۲

نمودار این صفت

پاسخ به این سری را به وقت بخوان

عقده $n \geq 1 \quad (n-1)^2 = 1 \Rightarrow n^2 - 2n + 1 = 1 \Rightarrow n^2 - 2n = 0 \Rightarrow n = 0$

عقده $n \leq 1 \quad -(n-1)^2 = 1 \Rightarrow (n-1)^2 = -1 \Rightarrow n^2 - 2n + 1 = -1 \Rightarrow n^2 - 2n + 2 = 0$

✓ ۱

(۲)

الف $-2 < \frac{2n-1}{n} < 2 \rightarrow -2 < 2 - \frac{1}{n} < 2 \rightarrow -4 < -\frac{1}{n} < 0$

$\frac{1}{n} > -4 \rightarrow n > \frac{1}{-4}$
 $-\frac{1}{n} < 0 \rightarrow n > 0$

$\Rightarrow \boxed{n > \frac{1}{4}}$

ب $\left| \frac{n-2}{n+1} \right| > 1 \quad n \neq -\frac{1}{2}$

$|n-2| > |n+1| \xrightarrow{\text{تکلیف}} n^2 - 4n + 4 > n^2 + 2n + 1$

$3n^2 + 8n - 3 < 0 \rightarrow \frac{-8 \pm \sqrt{64 + 36}}{+1 - 1} = (-3, \frac{1}{3})$

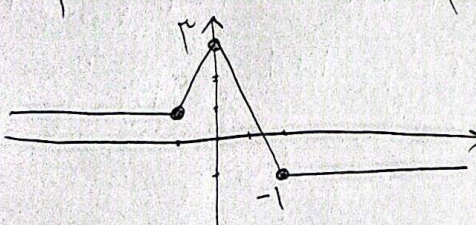
۲
۵

$n \geq 1 \quad n^2 < n+1 \Rightarrow n^2 - n - 1 < 0 \Rightarrow (n-2)(n+1) < 0 \Rightarrow \frac{-2}{+} \frac{1}{-} \Rightarrow n \in (-2, 1)$
 $\Rightarrow -2 < n < 1 \Rightarrow -2/5 < n - \frac{1}{5} < 2/5 \Rightarrow |n - \frac{1}{5}| < 2/5 \Rightarrow \boxed{\alpha = \frac{1}{5}}$

$n \leq 1 \quad n^2 < -n-1 \Rightarrow n^2 + n + 1 < 0$
عقده $\Delta < 0$

۲
(۲)

$-1 \quad 0 \quad 1$
 $-n-1+2n-n+2 \quad n+1+2n+2-n \quad n+1-2n+2-n \quad n+1-2n+n-2$
 $1 \quad 2n+2 \quad -2n+2 \quad -1$

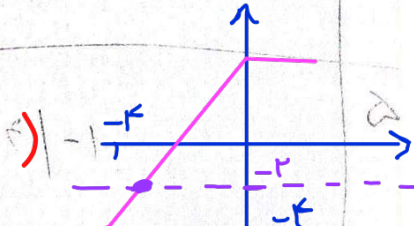


$2 + (-1) = 1$ ✓

۲
(۲)

تغییرات مقدار روی خود n اجرا

$y = \left| \frac{1}{2}n \right| - 2 \xrightarrow{\text{عقده}} \left| \frac{1}{2}(n+4) \right| - 1 \quad \left| \frac{1}{2}n \right| - 2 = \left| \frac{1}{2}(n+4) \right| - 1$

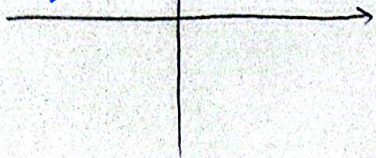


$\Rightarrow \left| \frac{1}{2}n \right| = \left| \frac{1}{2}n + 2 \right| + 1 \Rightarrow \frac{1}{4}n^2 \leq \frac{1}{4}n^2 + 2n + 4 + 1 + 2 \left| \frac{1}{2}n + 2 \right| \Rightarrow -(n+14) \leq 2 \left| \frac{1}{2}n + 2 \right|$
 $\Rightarrow 16n^2 + 124n + 289 = n^2 - 16n + 64 \Rightarrow 15n^2 + 140n + 225 = 0$
 $\Rightarrow \frac{-140 \pm \sqrt{19600 - 13500}}{30} = \frac{-140 \pm 80}{30} = \begin{cases} -\frac{20}{3} \\ -\frac{220}{30} = -\frac{22}{3} \end{cases}$
 $-4 < n < 0$
 $n + 4 + n = -2 \Rightarrow \boxed{n = -3}$

۵

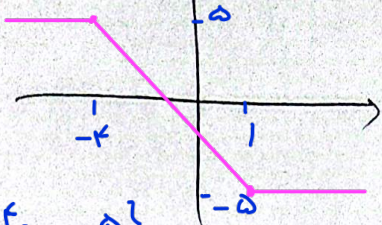
$$\frac{1}{n} - [1 + \frac{1}{n}] = \frac{1}{n} - [\frac{1}{n}] - 1$$

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



$$[1n-1-1n+4]$$

تابع آبشاری

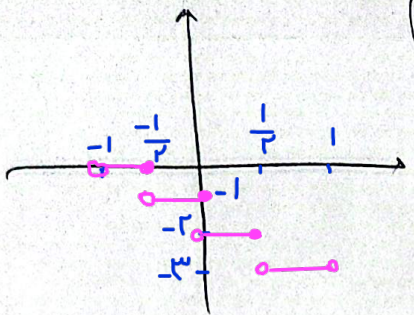


$$R = \{-5, -4, \dots, 5\}$$

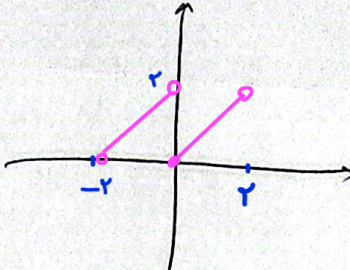
چون بکارت داریم، بد شکل مثل اولد مع این باز میماند

(الف)

۶
۰

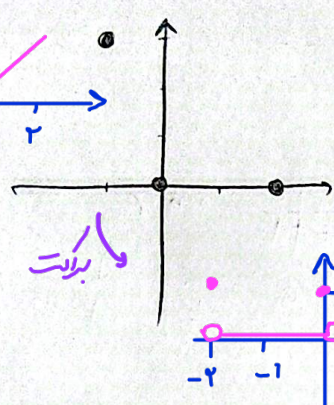
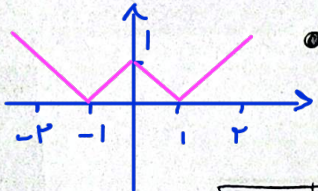


(ب)



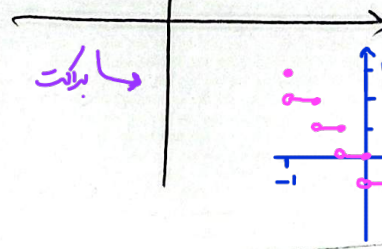
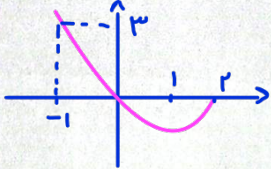
(الف)

۷
۰



بکارت

(ب)



بکارت

(الف)

۸
۰

$$b - [a] = \epsilon/2 \Rightarrow b = [a] + \epsilon/2 \Rightarrow [b] = [[a] + \epsilon/2] = [a] + [\epsilon/2] = [a] + \epsilon/2$$

$$\Rightarrow a + [b] = a + [a] + \epsilon/2 = \epsilon/2 \Rightarrow a + [a] = \epsilon/2 \Rightarrow [a + [a]] = [a] + [a] = \epsilon/2 = [\epsilon/2]$$

$$\Rightarrow [a] \leq 1 \quad b - [a] = b - 1 = \epsilon/2 \Rightarrow b = \epsilon/2 \Rightarrow [b] = \epsilon/2 \Rightarrow a + [b] = a + \epsilon/2 = \epsilon/2 \Rightarrow a = 1/2$$

$$a + b = \boxed{1, 1}$$

۹
۱, ۷۵

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

$$[(1 + \sqrt{2})^4] = [198 - (1 - \sqrt{2})^4] = 198 + [-(1 - \sqrt{2})^4] = \boxed{197}$$

[0-]

۱۰
۰