

تکلیف شماره ۲۱

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$$f(n) = \frac{4n^2 + (m+3)n + \frac{m}{2}}{\sqrt{4n^2 + (m+3)n + \frac{m}{2}} \times |2n^2 + (m-3)n + a^2|} \quad (1)$$

$$n=a \rightarrow 2a^2 + (m-3)a = 0 \quad a = \frac{3-m}{2}$$

$$0 = \frac{1}{2} \times (10m^2 - 64m + 40) \quad m = \frac{64 \pm 1}{20} = 2, 1, 4$$

$$m = 2, 1 \rightarrow a = -0, 1, 0$$

$$-x\sqrt{r} = x \tan b \quad b = \frac{\pi}{r}$$

$$f(n) = \frac{n^2 + an + b}{n-1} = \frac{(n-1)(n-b)}{n-1} = n-b \quad (2)$$

$$-1-b=a \quad a+b=-1$$

$$2n^2 - an + b = 2n^2 - an - a - 1 = 0$$

$$n=1 \rightarrow 2-a-a-1=0 \quad a=2 \quad b=-4$$

$$\left[\frac{b-2a}{a} \right] = \left[\frac{-4-4}{2} \right] = \left[\frac{-8}{2} \right] = -4$$

(۲) رابطه! پیوستگی راست و در تقاطع پیوستگی چپ

$$\begin{cases} n=1 \rightarrow \tan \frac{\pi n}{\varepsilon} = -1 \\ n>1 \rightarrow \frac{(n+2)(n-1)}{-a(n-1)} = \frac{r}{-a} \end{cases}$$

$$\frac{r}{-a} = -1 \quad a=r$$

$$\begin{cases} n=0 \rightarrow b(10) \\ n<0 \rightarrow \frac{2n}{-8a} \end{cases}$$

$$\Rightarrow 10b = \frac{-v}{a}$$

$$ab = \frac{-v}{10}$$

$$f(n) = a([n]+1) + b([n] + [a+1]) \quad (ع)$$

$$\rightarrow (a+b) \times [n] + a + b[a+1]$$

برای اینکه تابع در $\mathbb{R}$ یکنواخت باشد ضریب جزء صحیح = 0

$$a+b=0 \rightarrow f(n) = a + (-a)[a+1] \quad \textcircled{2}$$

$$f(n) = a - a([a]+1) = a - a - a[a] = -a[a]$$

$$\frac{a[a]}{f(a)} = \frac{a[a]}{-a[a]} = -1$$

$$f(n) = b[n^2 - an] - 2a \quad (د)$$

برای اینکه تابع در $\mathbb{R}$ یکنواخت باشد ضریب جزء صحیح = 0

$$f(n) = -2a$$

$$\frac{a}{f(b)} = \frac{a}{-2a} = -\frac{1}{2}$$

$$f(n) = \frac{n^2 + mn + n}{-(n-a)} = \frac{(n-a)(n - \frac{n}{a})}{-(n-a)} \quad (4)$$

$$= -(n - \frac{n}{a})$$

$$\rightarrow (-a - \frac{n}{a})n = (-\frac{a^2 - n}{a})n = mn \quad \frac{-a^2 - n}{a} = m$$

$$\begin{cases} n=a \rightarrow f=2 \end{cases}$$

$$\Rightarrow \begin{cases} n-a^2 = 2a \\ a^2 + 2a - n = 0 \end{cases}$$

$$\begin{cases} n \neq a \rightarrow -(a - \frac{n}{a}) = \frac{n-a^2}{a} \end{cases} \quad \textcircled{2}$$

$$f(2a) = -(2a - \frac{n}{a}) = \frac{-2a^2 + n}{a} = 0 \Rightarrow n = 2a^2$$

$$a^2 + 2a - n = a^2 + 2a - 2a^2 = 0 \quad 2a = a^2$$

$$a = 0 \text{ و } 2 \xrightarrow{\text{عددی}} a = 2 \quad n = 1 \quad m = -4$$

$$n-m = 1 - (-4) = 5$$

(V)

$$\begin{cases} n > r \rightarrow r(1-a) + (-r)(ra^r - 1) = -ra^r - ra + r \\ n = r \rightarrow b \sin\left(\frac{\pi}{a}\right) \\ n < r \rightarrow (1-a) + (-r)(ra^r - 1) = -ra^r - a + r \end{cases}$$

$$-ra^r - ra + r = -ra^r - a + r \rightarrow ra^r + a - r = 0$$

$$a = \left\{ -\cancel{r}b \frac{r}{a} \right\} \rightarrow a = \frac{r}{r} \quad bx - 1 = \frac{-1}{a}$$

$$b = \frac{1}{a}$$

$$\frac{a}{b} = \cancel{r}$$

$$f(n) = \begin{cases} n \neq 1 \rightarrow \frac{|(n-1)| \times |n+m+1|}{\frac{|n-1| \times (1+m|n+1|)}{m+r}} \\ n = 1 \end{cases} \quad (\wedge)$$

$$\begin{cases} n > 1 \rightarrow \frac{|m+r|}{1+rm} \end{cases}$$

$$n = 1 \quad \frac{m}{m+r}$$

$$\begin{cases} n < 1 \quad \frac{|r+m|}{1+rm} \end{cases}$$

$$\Rightarrow \frac{m}{m+r} = \frac{m+r}{rm+1}$$

$$m^2 + \epsilon m + \epsilon = rm^2 + m$$

$$m^2 - rm - \epsilon = (m-\epsilon)(m+1) = 0$$

$$m = \epsilon$$

$$\lim_{n \rightarrow \frac{1}{\epsilon}} f(n) = \frac{\left| \frac{1}{14} + 1 - 0 \right|}{\epsilon \times \frac{10}{14} + \frac{14}{14}} = \frac{-4\epsilon}{\sqrt{r}}$$

$$f = \frac{\sqrt{a} \times |a| \times |a+1|}{|a| \times |a^r + a + m - r|}$$

$$\Delta = 1 - \epsilon m + 1 = 0$$

$$m = \frac{a}{\epsilon}$$

$$a^r + a + \frac{1}{\epsilon} = 0$$

$$(a + \frac{1}{r})^r = 0$$

$$a = \frac{-1}{r}$$

$$\lim_{n \rightarrow \frac{1}{r}} f = \frac{\sqrt{a} \times \frac{1}{r}}{\left| \frac{-1}{\epsilon} \right|} = \frac{+\sqrt{r}}{r}$$

$$\left\{ \begin{array}{l} n > 0 \\ n = 0 \\ n < 0 \end{array} \right. \quad \begin{array}{l} \frac{n(n+1)}{n(n+a)} = \frac{n+1}{n+a} \\ \frac{\Gamma a - 1}{\Gamma a + \Gamma} \\ \frac{n(n-1)}{n(n-a)} = \frac{n-1}{n-a} \end{array} \quad \begin{array}{l} 10 \\ \\ \textcircled{\Gamma} \end{array}$$

$$n = 0 \rightarrow \frac{1}{a} = \frac{\Gamma a - 1}{\Gamma a + \Gamma} \quad \Gamma a + \Gamma = \Gamma a - a$$

$$\Gamma a - \Gamma a - \Gamma = 0 \quad a = \Gamma, \frac{1}{\Gamma} \quad a > 0 \Rightarrow a = \Gamma$$

$$\lim_{n \rightarrow \frac{1}{\Gamma}} f(n) = \frac{\frac{1}{\Gamma} + 1}{\frac{1}{\Gamma} + \Gamma} = \frac{\mu}{\delta}$$

-1 عدد ۵ باید تنها ریشه ی زیر را ارسال بابت و مفهم را هم صفر کنید!

$$\Delta = 0 \rightarrow (m+3)^2 - 4 \times 4 \left(\frac{m}{4}\right) = m^2 - 4m + 9 = 0 \rightsquigarrow \boxed{m=3}$$

$$\lim_{n \rightarrow a} \frac{\sqrt{4(n^2+n+\frac{1}{4})}}{|2n^2+a^2|} = \frac{\sqrt{4|n+\frac{1}{4}|}}{|2n^2+a^2|} \rightsquigarrow 2a^2+a^2 = 0 \rightarrow a=0 \quad (\text{مفهم مندرج و حدت عدد است})$$

$$\hookrightarrow a = -\frac{1}{4} \checkmark \rightsquigarrow \frac{\sqrt{4|n+\frac{1}{4}|}}{|2n^2-\frac{1}{4}n+\frac{1}{4}|} = \frac{2\sqrt{4}}{3}$$

$$\frac{2 \tan b}{\sqrt{-1(-\frac{1}{4})}} = \frac{2\sqrt{4}}{3} \rightsquigarrow \tan b = \sqrt{\frac{3}{2}} \rightarrow b = \frac{\pi}{4}$$

$$\lim_{n \rightarrow 1} \frac{|(n-1)(n+m+1)|}{m|(n-1)(n+1)| + |n-1|} = \frac{|n-1|(n+m+1)}{|n-1|(m|n+1|+1)} = \frac{|m+2|}{2m+1} = \frac{m}{m+2}$$

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$$m \geq -2 \rightsquigarrow m^2 + 4m + 2 = 2m^2 + m \rightarrow m = -1 \rightarrow \text{مفهم ریشه دار است!}$$

$$m < -2 \rightarrow \frac{|n^2+4n-2|}{|n-1|(4|n+1|+1)} = \frac{5+\frac{1}{2}}{4(\frac{5}{2})+1} = \frac{\frac{11}{2}}{11} = \frac{1}{2}$$

$$n=a \text{ ریشه است} \rightsquigarrow a^2+a=0 \rightarrow a=0 \checkmark$$

$$\hookrightarrow a = -1 \times$$

$$a^2+a(m-2)+a^2=0 \rightsquigarrow -1-m+2+1=0 \rightsquigarrow m=2$$

$$\lim_{n \rightarrow -1} \frac{\sqrt{3|-n-1|}}{|n^2-n+1|} = \frac{\sqrt{3}}{|n^2-n+1|} = \frac{\sqrt{3}}{3}$$

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