

سوال 1

تغییر نری جزیره یخبندان و دانه های تقویر برکتی دوباره باقی بماند

$$y = \frac{x+3}{2x^3+3x^2-11x+3} \rightarrow \frac{x+3}{(x-1)(2x^2-5x-3)}$$

$$[x=1] \leftarrow$$

$$\Delta = b^2 - 4ac = 25 - 4(-3)(-3) = 25 - 36 = -11 < 0$$

$$\Delta < 0 \rightarrow \Delta > 0$$

$$x^2+5x-9 = (x+4)(x-1) \rightarrow x = \frac{1}{4}$$

$$x = -\frac{5}{2} = -2.5$$

$$Df = \mathbb{R} - \left\{ -2.5, \frac{1}{4}, 1 \right\}$$

$$y = \frac{x+3}{2x^3+9x^2+10x+3}$$

$$x+3$$

$$(2x^3+9x^2+10x+3)$$

$$Df = \mathbb{R} - \left\{ -3, -1, -\frac{1}{2} \right\}$$

$$2x^3+9x^2+10x+3 = 0 \rightarrow x^2+5x-9$$

$$(x+4)(x-1) \rightarrow x = -\frac{1}{2}, -3 \rightarrow x = -1$$

سوال 2

$$y = \frac{x+3}{x^3-2x^2+2x-1} = \frac{x+3}{(x^2-x+1)(x-1)}$$

$$\Delta = 1 - 4 = -3 < 0$$

$$Df = \mathbb{R} - \{1\}$$

$$y = \sqrt{\frac{x+3}{x^3-2x^2+2x-1}} \geq 0 \rightarrow \sqrt{\frac{x+3}{(x^2-x+1)(x-1)}}$$

(ب)

$$\frac{-3}{+1-1} + \frac{1}{+1-1} \rightarrow Df = (-\infty, -3] \cup (1, +\infty)$$

2

$$x^2 - \omega(x-1) - 2x + \omega \neq 0$$

$$(1-x) \rightarrow (x-1)$$

$$Df = \mathbb{R} - \{-3, 0, \omega\}$$

$$\rightarrow 1) x^2 - \omega x - 2x + \omega + \omega = 0$$

$$(x-1)(x-\omega) \rightarrow \omega$$

$$Df = \mathbb{R} - \{2, \omega\}$$

(2)

$$x^2 - \omega + \omega x - 2x + \omega = x(x+3)$$

$$x^2+3x$$

$$Df = \mathbb{R} - \{-3, 0\}$$

TOPCO

Subject:

Name:

Year: Month: Date: ()

سوال (1)

$$y = \sqrt{[-n] - 2} \geq 0 \rightarrow [-n] \geq +2 \quad Df = (-\infty, -2] \quad (-\infty, -2]$$

(1,5)

$$(-4 - الف) \quad [-n] - 2 \geq 0 \rightarrow [-n] \geq 2 \rightarrow -n \geq 2 \rightarrow n \leq -2 \rightarrow Df = (-\infty, -2]$$

$$y = \frac{\omega n^2 + 4}{[n]^2 - 2[n] - 3} \neq 0$$

$$t = [n]$$

$$t^2 - 2t - 3 = 0$$

$$a + b = c \rightarrow t = -1$$

$$t = -\frac{c}{a} = 3$$

$$Df = \mathbb{R} \setminus ([3, 4) \cup [-1, 0])$$

سوال (2)

الف)

$$[n - \frac{1}{3}] + [n + \frac{2}{3}] \geq 0 \sim [n + \frac{2}{3}] - 1 + [n + \frac{2}{3}] \geq 0$$

$$2[n + \frac{2}{3}] \geq 1 \sim [n + \frac{2}{3}] \geq \frac{1}{2} \rightarrow \text{باید اولیا عدد صحیح باشد}$$

جواب ب است محاسبه عدد صحیح است

$$n + \frac{2}{3} \geq \frac{1}{2} \sim n \geq \frac{1}{6}$$

$$Df = [\frac{1}{6}, +\infty)$$

$$n + \frac{2}{3} \geq 1 \rightarrow n \geq \frac{1}{3}$$

(1,5)

$$ب) \quad \underbrace{[n - \frac{1}{3}]}_a + [- (n - \frac{1}{3})] \quad \begin{cases} a \in \mathbb{Z} \rightarrow 0 \\ a \notin \mathbb{Z} \rightarrow -1 \end{cases}$$

$$n - \frac{1}{3} \in \mathbb{Z}$$

$$Df = \{n \mid n = k + \frac{1}{3}, k \in \mathbb{Z}\}$$

$$n \in \mathbb{Z} + \frac{1}{3}$$



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الف) $y = \frac{\cos n + 1}{\tan n + 1} \neq 0$

(4 سوال)

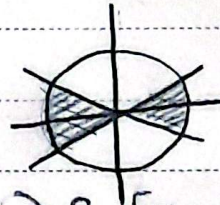
$$\left. \begin{array}{l} \sin n \neq 0 \rightarrow n \neq K\pi \\ \cos n \neq 0 \rightarrow n \neq K\pi + \frac{\pi}{2} \\ \tan n \neq -1 \rightarrow n \neq K\pi - \frac{\pi}{4} \end{array} \right\} n \neq \frac{K\pi}{4}$$

$$Df = \mathbb{R} - \left\{ K\pi, K\pi + \frac{\pi}{2}, K\pi + \frac{3\pi}{4} \right\}$$

ب) $y = \sqrt{1 - r \sin^2 n} \geq 0$

$$1 \geq r \sin^2 n$$

$$\sin^2 n \leq \frac{1}{r} \rightarrow |\sin n| \leq \frac{1}{\sqrt{r}} \quad Df = \left[K\pi - \frac{\pi}{4}, K\pi + \frac{\pi}{4} \right]$$

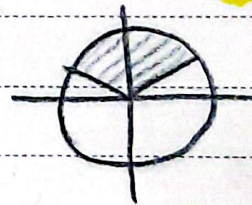


(2)

الف) $y = \sqrt{r \sin n - 1} \geq 0$

$$\sin n \geq \frac{1}{r}$$

$$Df = \left[rK\pi + \frac{\pi}{6}, rK\pi + \frac{5\pi}{6} \right]$$

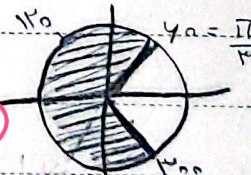


ب) $y = \sqrt{1 - r \cos n} \geq 0$

$$r \cos n \leq 1$$

$$\cos n \leq \frac{1}{r}$$

$$Df = \left[rK\pi + \frac{\pi}{3}, rK\pi + \frac{2\pi}{3} \right]$$



(2)

الف) $-1 \leq n^2 + 3n + 1 \leq 1$

$$n^2 + 3n + 1 \geq -1$$

$$n^2 + 3n + 4 \geq 0$$

$$(n+1)(n+4) \geq 0$$

$$\begin{array}{c} -2 \quad -1 \\ + \quad - \quad + \end{array}$$

$$n \geq -1 \quad \text{و} \quad n \leq -4$$

$$Df = [-3, -1] \cup [-1, 0]$$

TOPCO

$$n^2 + 3n + 1 \leq 1$$

$$n^2 + 3n \leq 0$$

$$n(n+3) \leq 0$$

$$\begin{array}{c} 3 \quad 0 \\ + \quad - \quad + \end{array}$$

$$-3 \leq n \leq 0$$

ب) $\cos y = \sqrt{\omega - 2n} \geq 0$ ① ② $\rightarrow Df = [2, 2\omega]$

$$\begin{aligned} -1 \leq \sqrt{\omega - 2n} \leq 1 & \quad \begin{array}{l} 2n \leq \omega \\ n \leq \omega/2 \end{array} \quad \text{②} \\ \omega - 2n \leq 1 & \quad \begin{array}{l} 2n \geq \omega - 1 \\ n \geq \omega/2 - 1/2 \end{array} \quad \text{③} \\ \omega - 2n \geq 0 & \quad n \leq \omega/2 \end{aligned}$$

(9 سوال)

الف) $y = \log_r$ $(1 - \log_r \frac{1}{r})$
 $1 - \log_r \frac{1}{r} > 0 \quad n > 0$

$\log_r \frac{1}{r} < 1 \sim n < r$

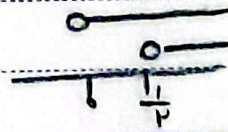
$Df = (0, r)$

ب) $y = \log_r$ $(1 - \log_r \frac{1}{r})$

$\log_r \frac{1}{r} > 0 \quad n > 0$ ①

$\log_r \frac{1}{r} < 1 \sim n > \frac{1}{r}$ ②

① ② $\rightarrow Df = (\frac{1}{r}, +\infty)$



(10 سوال)

الف) $r^{fn-mr} - 1 \geq 0 \quad \log \geq \log r$
 $r^{fn-mr} \geq 1$
 $fn - mr \geq 0$
 $-(mr - fn + r) \geq 0$
 $-(n-1)(n-1/r) \geq 0$

$Df = [0, r]$

ب) $\frac{rn + \omega}{rn + r} \in W$ $\xrightarrow{\text{GCD}} n = -\frac{r\omega + \omega}{r\omega - r}$

$Df = \{n \mid n \in -\frac{r\omega + \omega}{r\omega - r}, K \in W\}$

$$5 - \text{الف} \quad \left\lfloor n - \frac{1}{p} \right\rfloor + \left\lfloor n + \frac{p}{p} \right\rfloor \geq 0 \xrightarrow{+1} \left\lfloor n - \frac{1}{p} \right\rfloor + 1 + \left\lfloor n + \frac{p}{p} \right\rfloor \geq 1$$

$$\left\lfloor n + \frac{p}{p} \right\rfloor + \left\lfloor n + \frac{p}{p} \right\rfloor \geq 1 \rightarrow \left\lfloor n + \frac{p}{p} \right\rfloor \geq \frac{1}{2} \xrightarrow[\text{این عدد صحیح است!}]{\text{اولین عدد صحیح بعد از}} n + \frac{p}{p} \geq 1$$

$$n > \frac{1}{p} \rightarrow D_f = \left[\frac{1}{p}, +\infty \right)$$