

نام و نام خانوادگی تاریخ پاسخنامه تشریحی تکلیف شماره ... کلاس ... اندوخته خنجر B

الف) $\frac{(n-1)^2 - n^2}{n(n-1)} \geq 0 \rightarrow \frac{1-2n}{n(n-1)} \geq 0 \rightarrow$ $D_f = (-\infty, 0) \cup [1/2, 1]$

مخرج نباید صفر باشد $\rightarrow \frac{n-2n-2}{n(n+1)} \neq 0 \rightarrow n \neq -1$
 $\frac{3n+2+n-1}{(n+2)(n-1)} \neq 0 \rightarrow n \neq -2/3$
 $(n+2)(n-1) \neq 0 \rightarrow n \neq 1, -2$
 $D_f = \mathbb{R} - \{-1, -2/3, 1, -2\}$

الف) $\sqrt{(3^n - 3^2)(2^5 - 2^n)}$ $\rightarrow$ $D_f = [-2, 5]$

ب) $\sqrt{y+1} = 3 - \sqrt{n-1} \rightarrow y = (3 - \sqrt{n-1})^2 - 1 \rightarrow (2 - \sqrt{n-1})(4 - \sqrt{n-1})$
 $n-1 \geq 0 \rightarrow n \geq 1$
 $D_f = [1, +\infty)$

$\sqrt{y+1} = 3 - \sqrt{n-1} \rightarrow$ باید عددانته باشد $\rightarrow \sqrt{n-1} \leq 3 \rightarrow n-1 \leq 9 \rightarrow n \leq 10$
 $\sqrt{n^2-1} \neq -1$
 $D_f = (-\infty, -1) \cup (2, +\infty)$

$D_f = [-2, 1/2]$

$-n^2 + an + 4 \geq 0 \xrightarrow{n=-2} -4 - 2a + 4 = 0 \rightarrow a = -1/2$

$-n^2 - 1/2 n + 4 \geq 0 \xrightarrow{x=2} 4 - 1 + 4 = 7 \leq 0 \rightarrow n^2 + n - 2 \leq 0$
 $a+b = \frac{3-1}{2} = 1 \rightarrow a = -1/2, b = 1/2$
 $D_f = (-\infty, -2] \cup [1/2, +\infty)$

$f(n) \geq n \rightarrow 3n-2 \geq n, n \geq 1 \rightarrow n \geq 1 \rightarrow [1, +\infty)$

$2n+3 \geq n, n < 1 \rightarrow n \geq -3, n < 1$

$D_f = [-3, 1)$

$[-3, +\infty)$

$\leftarrow$ اجتماع $\leftarrow$

$$n = \sin \frac{\pi}{4} + \cos \frac{\pi}{4} \rightarrow \sin 45^\circ + \cos 45^\circ = \frac{\sqrt{2}}{2} + 1 \rightarrow \frac{2 + \sqrt{2}}{2}$$

$$f(n) = n^2 - 2n \rightarrow f(n) = 2 \times \left(\frac{2 + \sqrt{2}}{2}\right)^2 - 2 \times \frac{2 + \sqrt{2}}{2}$$

$$2 \times \frac{2 + 2 + 2\sqrt{2}}{2} - 2 - 2\sqrt{2} \rightarrow \frac{4 + 4\sqrt{2} - 4 - 4\sqrt{2}}{2} = 0$$

$$f(a) = \frac{a+1}{a-1} \rightarrow f\left(\frac{a+1}{a-1}\right) = a \rightarrow \frac{\frac{a+1}{a-1} + 1}{\frac{a+1}{a-1} - 1} = a$$

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

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

تقریباً مساوی!

$$g(a) = \sqrt{a^2 - 1} \rightarrow f(\sqrt{a^2 - 1}) = -f^2 \rightarrow (\sqrt{a^2 - 1})^2 - 2\sqrt{a^2 - 1} + 1 = 0$$

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

$$(\sqrt{a^2 - 1} - 1)^2 = 0$$

$$a^2 - 1 = 1 \rightarrow a = \pm \sqrt{2}$$

$$-4 = n + 4 \rightarrow n = -8 \rightarrow f(-4) = (-4)^2 - 2(-4) + 4 = 28$$

$$4 = n + 4 \rightarrow n = 0 \rightarrow f(1) = (1)^2 - 2(1) + 4 = 3$$

$$f(-4) \times f(1) = 28 \times 3 = 84$$

$$4 \cos^2 + 2 \cos = 1, 2 \rightarrow (4 \cos^2 + 2 \cos - 1, 2 = 0) \times 2$$

$$8 \cos^2 + 4 \cos - 2 = 0 \rightarrow 4 \cos^2 + 2 \cos - 1 = 0$$

نوشته شده

$$\cos = \frac{-1 \pm \sqrt{1 + 4}}{2} = \frac{-1 \pm \sqrt{5}}{2}$$

$$(4 \cos^2 + 2 \cos - 1)(4 \cos^2 + 2 \cos - 1) = 0$$

$$-1/2 \leq \cos n \leq 1 \leftarrow \text{غیر قابل قبول} \rightarrow \cos n = 1/2$$

$$f(1, 2) = \tan^2 45^\circ = (\sqrt{3})^2 = 3$$

ب-۲) $\sqrt[n]{x-1} + \sqrt{y+1} = 3$ و $\sqrt{y+1} = 3 - \sqrt[n]{x-1} \rightarrow 3 - \sqrt[n]{x-1} \geq 0 \rightarrow \sqrt[n]{x-1} \leq 3 \rightarrow x \leq 82$ I

$\downarrow$
 $x-1 \geq 0 \rightarrow x \geq 1$ I

I, II $\rightarrow 1 \leq x \leq 82 \rightarrow \text{Df} = [1, 82]$

۲-الف) $((\frac{1}{x})^n - 9)(32 - x^n) \geq 0 \rightarrow$
 $\frac{-2}{+} \quad \frac{5}{-}$
 $\frac{-2}{+} \quad \frac{5}{-}$
 $\rightarrow \text{Df} = (-\infty, -2] \cup [\frac{5}{2}, +\infty)$

$\downarrow$
 $(\frac{1}{x})^n = 9 \rightarrow x = -2 \quad 32 = x^n \rightarrow x = \frac{5}{2}$

$f(f(a)) = \frac{f(a)+1}{f(a)-1} = a \rightarrow \frac{\frac{a+1}{a-1} + 1}{\frac{a+1}{a-1} - 1} = \frac{\frac{a+1+a-1}{a-1}}{\frac{a+1-a+1}{a-1}} = \frac{2a}{2} = a$ -V

$x \in \text{Df} \rightarrow x \in \mathbb{R} - \{1\}$ پس به ازای تمامی نقاط در دامنه f برقرار است ✓