

دینا سقای

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سوال 1 :

است حتماً باید دست نویسی باشد و در نه مغز میسری

ب: $f(x) \geq x-1$

$$f(x) = \begin{cases} x-1 & x \geq 0 \\ x+1 & x < 0 \end{cases}$$

$$\begin{cases} x_{n-1} \geq x-1 \\ x \geq 0 \end{cases} \checkmark$$

$x \geq 0$

(2)

$$f_{n+1} \geq x-1$$

$x < 0$

$$x+1 \geq -1 \rightarrow x \geq -2 \checkmark$$

$$D_{g(x)} = [0, +\infty) \cup \left[-\frac{1}{2}, 0\right) = \left[-\frac{1}{2}, +\infty\right)$$

سوال 2: $\frac{11x(2x+1) + 3(11x^2+1)}{((2x+1))^2} = \frac{11x(2x+1) + 3(2x+1)(2x^2-2x+1)}{((2x+1))^2}$

$$= \frac{(2x+1)(11x^2 - 4x + 11x + 1)}{((2x+1))^2} = \frac{2(2x+1)^2 A (x^2 + 2x + 1) (2x+1)^2}{(2x+1)^2}$$

$$= \frac{2x(2x+1)^2}{(2x+1)^2} = \frac{2}{2x+1} \checkmark$$

$$D_f = \mathbb{R} - \left\{ -\frac{1}{2} \right\}$$

سوال 3: $f(x) = \begin{cases} \frac{x(x^2-1) + 2(x^2-1)}{x^2-1} = \frac{(x^2-1)(x+2)}{x^2-1} & x \neq \pm 1 \\ \frac{ax+2}{x+b} \end{cases}$

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

$$n = \pm 1$$

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

$$-2b+2 = -1+b$$

$$3b = 3 \rightarrow b = 1$$

$$g(x) = x+2 \checkmark$$

$$g(1) = 3 \checkmark$$

$$g(-1) = 1 \checkmark$$

$$a = \frac{15-1}{2} = 7$$

$$b+c = \frac{5}{2} + 2 = \frac{9}{2}$$

$$g(n) = \frac{(n-1)(n+1)}{(n-1)^2} = \frac{n+1}{n-1} \quad \text{سوال ٢} \quad (2)$$

$$f(n) = \frac{n+1}{n-1} \quad \begin{matrix} a = -1 \\ b = 1 \\ c = 1 \end{matrix} \quad \left. \begin{matrix} a+b+c = 0 \end{matrix} \right\} \quad (2)$$

$$f(n+1) = (n+1-1)^2 (n+1+1) = n(n+2)^2 \quad \text{سوال ٢} \quad (2)$$

$$f(1-x) = (1-x-1)^2 (1-x+1) = -x(x+2)^2 \quad (2)$$

$$g(n) = x(x-2)^2 - x(n+2)^2 = x(x^2 - 4x + 4 - n^2 - 4n - 4) = x(x^2 - 4x - n^2 - 4n)$$

$$g(n) = -4n^2 \quad \checkmark$$

$$1-2x = -1 \rightarrow 2x = 2 \rightarrow x = 1$$

$$x=1 \rightarrow f(-1) = 1\sqrt{1} = 1 \quad ? \quad f(-1) + f(n) = 0 \quad \checkmark \quad (2)$$

$$\frac{1-x=2}{-1-x=2} \rightarrow x=-1 \quad f(2) = \sqrt{-1} + 2 = 1 \quad \checkmark$$

$$x + \sqrt{n} = 4 \xrightarrow{\sqrt{n}=6} t^2 + t - 4 = 0$$

$$(t+2)(t-2) = 0 \rightarrow t = 2 = \sqrt{n} \rightarrow n = 4 \quad \text{سوال ٢} \quad (2)$$

$$f(4) = (2)^2 + 2(4) = 4 + 8 = 12 \quad \checkmark$$

$$f(n) = n(n^2+1) \quad \begin{matrix} f(n-1) = (n-1)((n-1)^2+1) \\ = (n-1)(n^2-2n+2) \end{matrix} \quad \text{سوال ٢} \quad (2)$$

$$f(1-x) = (1-x)((1-x)^2+1) = (1-x)(1-2x+x^2+1) = (1-x)(2-2x+x^2)$$

$$f(n-1) + f(1-n) = (n^2-2n+2)(1-n+1-n) = 0 \quad \checkmark$$

$$D_f = n \geq \frac{ra}{\varepsilon} \quad \left\{ \begin{array}{l} D_{f \cap g} = \frac{ra}{F} \leq n \leq \frac{b}{\varepsilon} \end{array} \right. \quad -9 \text{ سال} \quad (r)$$

$$D_g = \frac{b}{F} \geq n$$

$$\frac{b}{\varepsilon} = 1 \rightarrow b = \varepsilon$$

$$\frac{ra}{\varepsilon} = 1 \rightarrow a = \frac{\varepsilon}{F}$$

$$f(n) = \sqrt{rn - \varepsilon} + K - 1$$

$$g(n) = \sqrt{\varepsilon - \varepsilon n} + rK$$

$$f(1) = \sqrt{0} + K - 1 \rightarrow r f(1) = rK - r$$

$$g(1) = \sqrt{\varepsilon - \varepsilon} + rK = rK$$

$$r f(1) - g(1) = rK - r - rK = -r \rightarrow -r = -rK \rightarrow K = 1$$

$$r\left(\frac{\varepsilon}{F}\right) - \frac{r}{F} - (-1) = r - r + 1 = 1$$

$$D_f = x \leq m \quad \left\{ \begin{array}{l} D_{f \cap g} = -1 \leq n \leq m \end{array} \right. \quad -10 \text{ سال} \quad (r)$$

$$D_g = n \geq -1$$

$$f(n) = \sqrt{V - x} + n$$

$$g(n) = \sqrt{r n + r}$$

$$f(r) - g(r) =$$

$$\sqrt{V - x} + n - \sqrt{r} = 4\sqrt{r} \rightarrow n = 4\sqrt{r} - \sqrt{V - x}$$

$$m + n = 4\sqrt{r} - \sqrt{V - x} + V = 4\sqrt{r} + V$$

(۲) ضابطه های بساط

$$f(n) = \begin{cases} \frac{(n-1)(n^2+3n+2)}{(n-1)(n+1)} = n+2 \\ \frac{an+2}{n+b} \end{cases}$$

$$f(1) = \frac{a+2}{1+b} = 3 \rightarrow a-3b = 1$$

$$f(-1) = \frac{-a+2}{-1+b} = 1 \rightarrow a+b = 3$$

۳- برای تساوی دو تابع (۱) دامنه های برابر

$$n \neq \mp 1 \Rightarrow c = 2$$

$$n = \mp 1$$

مقدار تابع در $n = \mp 1$ باید در دو تابع f و g برابر باشند:

$$\left\{ \rightarrow a = 2, 5, b = 0, 5 \rightarrow b+c = 2, 5 \right.$$