

$$\begin{aligned} f(-2) &\sim 3a - 1 \quad f(8) = (a+1) \rightarrow 1(a+1) = 3a - 1 \\ 2f(8) &= f(-2) + a \\ 2(a+1) &= 3a - 1 \rightarrow 1 \cdot a = -1 \rightarrow a = -1 \end{aligned}$$

$$\begin{aligned} \left. \begin{array}{l} n_1 \rightarrow 2 - \sqrt{3} \\ n_2 \rightarrow 2 + \sqrt{3} \end{array} \right\} &\rightarrow f(2 - \sqrt{3}) + f(2 + \sqrt{3}) = \sqrt{2 - \sqrt{3}} \\ &+ \frac{1}{\sqrt{2 - \sqrt{3}}} + 2 \Rightarrow f(2 - \sqrt{3}), f(2 + \sqrt{3}) = \sqrt{2 + \sqrt{3}} + \frac{1}{\sqrt{2 + \sqrt{3}}} + 2 \\ &\rightarrow \sqrt{2 - \sqrt{3}} + \sqrt{2 + \sqrt{3}} + \frac{1}{\sqrt{2 - \sqrt{3}}} + \frac{1}{\sqrt{2 + \sqrt{3}}} + 2 = 2(\sqrt{2 + \sqrt{3}} + \sqrt{2 - \sqrt{3}}) + 2 \\ &= 2 + \sqrt{3} + 2 - \sqrt{3} + 2\left(\frac{\sqrt{2 + \sqrt{3}}}{\sqrt{2 + \sqrt{3}}} + \frac{\sqrt{2 - \sqrt{3}}}{\sqrt{2 - \sqrt{3}}}\right) \Rightarrow 2 \Rightarrow S = \sqrt{3} \rightarrow 2\sqrt{3} + 2 \end{aligned}$$

$$\begin{aligned} f^2(n) - 9f(-n) &= 12n^2 - 2n \\ 9f(-n) &= 9f(n) = 12n^2 + 2n \rightarrow -8f(n) = 2n^2 + n \\ f(n) &= -\frac{1}{4}n^2 - \frac{n}{8} \end{aligned}$$

$$\begin{aligned} n \rightarrow 0 \quad f(0) &= (3 \times 0) \rightarrow 3n + 1 \rightarrow f(0) = \frac{3n-1}{2} \\ n \rightarrow -2 \quad f(0) &= f(-2) + 9f(0) = (2 + 3n + 3n - 1) \rightarrow f(0) = \frac{(2 + 6n)}{9} = \frac{3n-1}{2} \\ &\rightarrow 2 + 1 \cdot n = 12n - 9 \rightarrow 12n = 11 \rightarrow n = \frac{11}{12} \\ f(0) &= \frac{3n-1}{2} \rightarrow \frac{3 \cdot \frac{11}{12} - 1}{2} = \frac{1}{8} \end{aligned}$$

$$\begin{aligned} \frac{3n^2 - 12n + 3}{n} &\rightarrow f(n) + f\left(\frac{1}{n}\right) \quad \text{یک تابع خطی داریم} \\ \frac{3n^2 - 12n + 3}{n} &\rightarrow 3n - 12 + \frac{3}{n} \quad an + b + \frac{a}{n} + b \rightarrow \frac{3n^2 - 12n + 3}{n} \\ &\rightarrow 3n - 12 + \frac{3}{n} \rightarrow a = 3, b = -12 \rightarrow f(n) = 3n - 12 \rightarrow f(-1) = -15 \end{aligned}$$

$$(0 < 1-n) \leadsto 1-n \geq 0 \leadsto D_f \leadsto (-\infty, 1]$$

$$(1-n)^3 \geq 0 \leadsto 1-n \geq 0 \leadsto D_g \leadsto (-\infty, 1]$$

$$-\sqrt{(1-n)^3(1+n)} \leadsto -|1-n|\sqrt{1-n} \leadsto -1+n\sqrt{1-n} \leadsto (1-n)\sqrt{1-n}$$

$= f(n) \leadsto$ دانش و ظاهره ظاهره

$$n\sqrt{n} \leadsto D_f = [0, +\infty) / \sqrt{n} \leadsto D_g = [0, +\infty)$$

$\leadsto$ دانشی مساوی

$$\begin{aligned} &\rightarrow \sqrt{n^3} \leadsto |n|\sqrt{n} \leadsto n\sqrt{n} \\ &g(n) \leftarrow \begin{matrix} + & + & + \\ n & n & n \end{matrix} \end{aligned}$$

تابع مساوی
ممنوعاتی ظاهره و دانشی
مساوی داریم

$$g(n) = \sqrt{n-|n|} \leadsto n \geq |n| \leadsto D_g = [0, +\infty)$$

$$f(n) = \left[\sqrt{n} - \sqrt{|n|} \right]$$

$\leadsto [0, +\infty) \leadsto [0, +\infty)$

به خاطر آنکه فقط قسمت افندی داریم برای همین
f(n) مساوی با صفر
در حقیقی نمی تواند باشد
فقط در صورتی می تواند صفری باشد
n حقیقی بگذارد که زیر را اکیال جواب نیست

$$n=1 \rightarrow \left. \begin{matrix} f(1) \leadsto 2 \\ g(1) \leadsto 1 \end{matrix} \right\} \leadsto \frac{2+1}{2-1} \leadsto 3$$

الف

$$n=2 \rightarrow \left. \begin{matrix} f(2) \leadsto 3 \\ g(2) \leadsto 2 \end{matrix} \right\} \leadsto \frac{3+2}{2-2} \leadsto \frac{5}{0} \leadsto \infty$$

ب

$$g(-1) f(0) \leadsto 0 \times 1 \leadsto 0$$

ج

$$f(xn-1) = g(n) \leadsto xn-1 \left\{ \begin{aligned} &2 \leadsto n=1 \leadsto (1, 1) \\ &-1 \leadsto n=0 \leadsto (0, 4) \\ &0 \leadsto n=\frac{1}{4} \leadsto (\frac{1}{4}, 8) \\ &3 \leadsto n=\frac{4}{3} \leadsto (-\frac{1}{3}, 2) \\ &-2 \leadsto n=-\frac{1}{3} \leadsto (\frac{1}{3}, -1) \end{aligned} \right.$$

$|n|=3 \leadsto n=3, 6, -3$

$\leadsto (4, -1) (-3, -1)$

$2 \leadsto n=2 \leadsto n=2, 6, -2$

$0 \leadsto n=0 \leadsto (0, 8)$

$x-1$

$x-2$

$g(n) = \left\{ \begin{aligned} &\text{الف} \\ &(\frac{4}{3}, -1) (\frac{1}{4}, 8) (1, 1) \\ &(0, 4) \end{aligned} \right.$

$f(n) = \left\{ \begin{aligned} &\text{ب} \\ &(2, 1) (0, 8) (0, 4) (-3, -1) (-2, -1) \end{aligned} \right.$