

$$f(5) = 5a + 7$$

$$f(-2) = 3a - 5$$

$$\rightarrow 14a + 14 = 3a - 5 + a \Rightarrow 10a = -19 \rightarrow a = -1.9$$

(سوال ۱)

$$\left. \begin{aligned} f(2-\sqrt{3}) &= \sqrt{2-\sqrt{3}} + \frac{1}{\sqrt{2-\sqrt{3}}} \times \frac{\sqrt{2+\sqrt{3}}}{\sqrt{2+\sqrt{3}}} + 2 \rightarrow \sqrt{2-\sqrt{3}} + \sqrt{2+\sqrt{3}} + 2 \\ f(2+\sqrt{3}) &= \sqrt{2+\sqrt{3}} + \frac{1}{\sqrt{2+\sqrt{3}}} \times \frac{\sqrt{2-\sqrt{3}}}{\sqrt{2-\sqrt{3}}} + 2 \rightarrow \sqrt{2+\sqrt{3}} + \sqrt{2-\sqrt{3}} + 2 \end{aligned} \right\} 2A + 4 \Rightarrow 2\sqrt{4+4}$$

$$A = 2 - \sqrt{3} + 2 + \sqrt{3} + 2\sqrt{4-3} \rightarrow A = 4 \rightarrow A = \sqrt{4}$$

(سوال ۳)

$$\left. \begin{aligned} x \rightarrow 2f(x) - 3f(-x) &= 5x^2 - x \\ -x \rightarrow 2f(-x) - 3f(x) &= 5x^2 + x \end{aligned} \right\} \begin{aligned} \times 2, \quad 4f(x) - 9f(-x) &= 10x^2 - 2x \\ \times 3, \quad 4f(-x) - 9f(x) &= 15x^2 + 3x \end{aligned} \rightarrow -5f(x) = 5x^2 + x$$

$$f(x) = \frac{5x^2 + x}{-5}$$

$$f(1) \rightarrow 2f(1) = 3m - 1$$

$$f(-2) \rightarrow 4f(-2) = 18 + 8m$$

$$10m - 9 = 18 + 8m \rightarrow 2m = 27 \rightarrow m = 13.5$$

$$\frac{3m-1}{2} = \frac{18+8m}{4}$$

$$f(1) \Rightarrow \frac{10}{4} \rightarrow \frac{5}{2}$$

$$f(n) = an + b \quad f\left(\frac{1}{n}\right) = \frac{a}{n} + b$$

$$an + \frac{a}{n} + 2b \rightarrow \frac{an^2 + a + 2bn}{n} = \frac{3n^2 + 3 - 12n}{n}$$

$$\left(\begin{aligned} a &= 3 \\ b &= -4 \end{aligned} \right) \rightarrow f(n) = an + b$$

اه نعم ————— با اصل متغیر یک رو جایگزینی کنیم که راحت تر جواب پیدا بشه! ☺

$$Df(n) \rightarrow 1-n \geq 0 \rightarrow 1 \geq n \xrightarrow{n=\frac{1}{4}} -\frac{1}{4}\sqrt{\frac{1}{4}}$$

$$Dg(n) \rightarrow 1-n \geq 0 \rightarrow 1 \geq n \xrightarrow{n=\frac{1}{4}} -\frac{1}{4}\sqrt{\frac{1}{4}}$$

$$g(n) = f(n)$$

(سوال ۴)

$$Df(n) = n \geq 0 \rightarrow n\sqrt{n}$$

$$Dg(n) = n \geq 0 \xrightarrow{n \geq 0} |n|\sqrt{n} \rightarrow n\sqrt{n}$$

(سوال ۷) برای تمام اعداد برابرانه پس دو تابع مساوی اند!

$$Df(n) = n \geq 0 \rightarrow 0 \leq \sqrt{n} - [\sqrt{n}] < 1$$

$$Dg(n) = \begin{pmatrix} \oplus \\ \ominus \\ \oplus \end{pmatrix} \rightarrow n \geq 0 \rightarrow \text{همواره برابر باشند}$$

$$\rightarrow g(n) = f(n)$$

(سوال ۸)

سؤال 9

الف) $\frac{f(1)+g(1)}{f(1)-g(1)} \rightarrow \frac{2+1}{2-1} \rightarrow 3$ $\frac{f(2)+g(2)}{f(2)-g(2)} \rightarrow \frac{3+3}{3-3} \rightarrow \infty$

ج) $0 \times \infty \rightarrow 0$

$f(m) = \{(2,1), (-1,4), (2,5), (-2,2), (3,-1)\}$ سؤال 10

الف) $g(m) = f(3m-1)$

$3m-1=2 \rightarrow m=1 \rightarrow (1,1)$ $3m-1=0 \rightarrow m=\frac{1}{3} \rightarrow (\frac{1}{3}, 4)$ $3m-1=+3 \rightarrow m=\frac{4}{3} \rightarrow (\frac{4}{3}, -1)$

$3m-1=-1 \rightarrow m=0 \rightarrow (0, 4)$ $3m-1=-2 \rightarrow m=-\frac{1}{3} \rightarrow (-\frac{1}{3}, 2)$

$g(m) \rightarrow \{(1,1), (0,4), (\frac{1}{3}, 4), (-\frac{1}{3}, 2), (\frac{4}{3}, -1)\}$

ب) $h(m) = f(|m|)$

$|m|=2 \rightarrow m=\pm 2 \rightarrow (2,1), (-2,1)$ $|m|=-1$ غير ممكن $|m|=0 \rightarrow (0,0)$ $|m|=3$ غير ممكن $|m|=3 \rightarrow m=\pm 3 \rightarrow (3,-1), (-3,-1)$

$h(m) = \{(2,1), (-2,1), (0,0), (3,-1), (-3,-1)\}$

Σ