

①

$$f(m) = n + [n]$$

$$f(m) = n + [n] \rightarrow [y] = [n] - [y] = [n]$$

$$f^{-1} \rightarrow n + \frac{[y]}{r} \rightarrow y = n - \frac{[n]}{r} = f^{-1}(m)$$

$$n - \frac{[n]}{r} = n + [n] \rightarrow r[n] = -[n] \rightarrow r[n] = 0$$

فقط $n=0$ جواب

$$f^{-1} \circ f^{-1}(m) = 2m - \frac{r}{r} \rightarrow n = \frac{r}{r}$$

فقط $n=1$ جواب

$$m \rightarrow \{ (2k, 2k+1) \mid k \in \mathbb{Z} \}$$

②

$$y = \frac{am+r}{(m+b)}$$

جواب $\frac{-b}{r}$ و $\frac{a}{r}$

$$y = \frac{-bm+r}{(m+b)} \xrightarrow{b+b=0} f(m) = f^{-1}(m)$$

③

$$\sqrt{n} + \sqrt{y} = r \xrightarrow{f^{-1}} \sqrt{y} + \sqrt{n} = r \rightarrow f^{-1}(m) = f(m)$$

$Df^{-1} = Rf^{-1} = [0, 1]$ و $Rf = [0, 1]$

④

$$y = -m + \sqrt{n+1} \quad n \geq -1$$

$$y+m = \sqrt{n+1} \rightarrow (y+m)^2 = (\sqrt{n+1})^2 \rightarrow n^2 + y^2 + 2my = n+1$$

$$n^2 - (n+1) - (n^2 + 14) = 14 - 2n \rightarrow n^2 + n^2 + 2my - n - 15 = 0$$

$$y = \frac{-2m+1 \pm \sqrt{14-2m}}{2}$$

فقط $n=0$ جواب

⑤

$$g(m) = 2f(m) - 1$$

$$g^{-1}(m) = a f^{-1}\left(\frac{a+b}{c}\right) + d$$

$$g(m) = 2f(m) - 1 \xrightarrow{g^{-1}} g = 2f(m) - 1 \rightarrow f(m) = \frac{m+1}{2}$$

$$f^{-1}\left(\frac{m+1}{2}\right) = y \rightarrow y = f^{-1}\left(\frac{m+1}{2}\right)$$

باید $\frac{a+b}{c} = \frac{m+1}{2}$

باید $\frac{a+b}{c} = \frac{m+1}{2}$

⑥

$$f(m) = m + 2\sqrt{m} + 1 - 1$$

$$y = (\sqrt{m} + 1)^2 - 1$$

$$m+1 = (\sqrt{y} + 1)^2 \xrightarrow{\sqrt{\cdot}} \sqrt{y} + 1 = \sqrt{m+1}$$

$$\sqrt{y} = \sqrt{m+1} - 1 \rightarrow y = (\sqrt{m+1} - 1)^2 \rightarrow f^{-1}(m) = f^{-1}(m)$$

⑦

$$y = r^m + m - 1 \rightarrow y: \text{تعداد}$$

$n = r^m + m - 1$

$r^m = 1 \rightarrow m=0$

⑧

$$f(m) = n^2 + \varepsilon m$$

$$y = \sqrt{f^{-1}(m) - n}$$

$n^2 + \varepsilon m = n \rightarrow n(m+1) = n$

نشان می دهد که f^{-1} معکوس f نیست

نشان می دهد که f^{-1} معکوس f نیست

سوال ۳
تابو همگرا نیست و اردن خود را روی $y=x$ قطع میکند.

$$\frac{mn + 3}{n + m + 3} = n \rightarrow n^2 + mn + 3n = mn + 3 \rightarrow n^2 + 3n - 3 = 0$$

$$\frac{1}{a} + \frac{1}{b} = \frac{a+b}{ab} = \frac{S}{P} = \frac{-3}{-a} = 1 \quad (1)$$

$$f(n) = |2n+1| - |n-2| \rightarrow$$

ق ق

$$\begin{cases} -3n+7 & n > \frac{2}{5} \\ 3n+3 & -\frac{2}{5} \leq n \leq \frac{2}{5} \\ n-3 & n \leq -\frac{2}{5} \end{cases}$$

سوال ۴

$$y = -3n+7 \rightarrow n = \frac{7-y}{3}$$

$$f^{-1}(n) = \frac{7-n}{3}, \quad Df^{-1} = \mathbb{R} \quad n \leq \frac{19}{5}$$