

1) $\{(2, 2), (n, 2), (2, n-1), (n, n-1), (-1, 1)\}$

2 $m=2 \quad n-1=2$

3 $n-1-2=0 \rightarrow (n-1)(n-1)=0 \rightarrow n=1 \rightarrow \text{X}$

4) $\{(-1, 1), (1, 2), (2, 3), (a, m-1), (a+2, 1), (m, 2)\}$

5 $m=2 \quad (-1, 1)(a, 1) \rightarrow a=-1$

6 $(a+2, 1) \rightarrow (1, 1) \quad (1, 2) \rightarrow h=2$

7) $f(n) = \begin{cases} 2n-1 & n \geq 1 \\ na & a < 1 \end{cases} \quad \begin{matrix} n+2 < r \\ 1+a < r \\ a < 1 \end{matrix}$

8) $f(n) = \begin{cases} 2n-1 & n \geq 1 \\ an+a-1 & n \leq 10 \end{cases}$

9 $an+a-1 < r \quad a-1 < r \quad a < r$

10 $a \neq 0 \quad 0 < a < r$

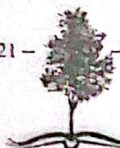
11 $a > 0 \quad a=1, 2$

12) $f(n)$

13 $y \leq x^2 + 2$

14 $y_1 \leq y_2 \quad x_1^2 \leq x_2^2 \rightarrow x_1 = x_2 \quad \checkmark$

15 $x = y^2 + 2 \rightarrow x-2 = y^2 \quad y = \sqrt{x-2}$



$$V) y = x + \sqrt{x}$$

$$x = y + \sqrt{y}$$

$$\text{دعوى, } y + \sqrt{y} + \frac{1}{r} - \frac{1}{r} = 1$$

$$x + \frac{1}{r} = (\sqrt{y} + \frac{1}{r})^r$$

$$\sqrt{x + \frac{1}{r}} = \sqrt{y} + \frac{1}{r} \rightarrow \sqrt{y} = \sqrt{x + \frac{1}{r}} - \frac{1}{r}$$

$$y = x + \frac{1}{r} + \frac{1}{r} - \sqrt{x + \frac{1}{r}} = x - \sqrt{x + \frac{1}{r}} + \frac{1}{r}$$

$$\underline{a=1} \quad b = \frac{1}{r}$$

$$f^{-1}(x) = ax + b - \sqrt{x - c}$$

$$\underline{c = -\frac{1}{r}}$$

$$a + rb + rc = 1 + 1 - 1 = 1$$

$$1) y = \frac{x}{\sqrt{x^r - r}}$$

$$\frac{x_1}{\sqrt{x_1^r - r}} = \frac{x_r}{\sqrt{x_r^r - r}}$$

$$x_1 (\sqrt{x_r^r - r}) = x_r \sqrt{x_1^r - r}$$

$$\cancel{x_1}^r \cancel{x_r}^r - r x_1 = \cancel{x_1}^r \cancel{x_r}^r - r x_r$$

$$-r x_1 = -r x_r \Rightarrow x_1 = x_r \quad \underline{\text{مطلوب}}$$

$$x = \frac{y}{\sqrt{y^r - r}} \quad ()^r \quad x^r = \frac{y^r}{y^r - r}$$

$$x^r y^r - r x^r = y^r$$

$$r x^r = x^r y^r - y^r$$

$$y^r (x^r - 1) = r x^r$$

$$y^r = \frac{r x^r}{x^r - 1}$$

$$y = \sqrt[r]{\frac{r x^r}{x^r - 1}} = y = \frac{\sqrt[r]{r} x}{\sqrt{x^r - 1}}$$

مطلوب هو x, y



Senobar

$$f^{-1}(x) = \frac{x}{x+|x|}$$

$$g(x) = \sqrt{x} - 1$$

$$x > 0$$

$$\frac{x}{1+x} = y \rightarrow \frac{y}{1+y} = x$$

$$y = x + yx$$

$$y - yx = x$$

$$y(1-x) = x$$

$$y = \frac{x}{1-x}$$

$$x < 0 \quad \frac{x}{1-x} = y \rightarrow$$

$$y = x - yx$$

$$y + yx = x \quad y(1+x) = x$$

$$y = \frac{x}{1+x}$$

$$g(x) = y = \sqrt{x} - 1$$

$$x = \sqrt{y} - 1$$

$$x+1 = \sqrt{y}$$

$$y = (x+1)^2$$

$$f(x) + g^{-1}(x) \quad x = -\frac{r}{a}$$

$$\frac{-\frac{r}{a}}{\frac{a-r}{a}} = \frac{-r}{a} + \left(\frac{-r}{a} + 1\right)^r$$

$$\frac{-r}{a} + \frac{1}{a} = \frac{r\sqrt{a}}{\sqrt{a}}$$

$$= \frac{-r\sqrt{a}}{\sqrt{a}}$$

$$10) f^{-1}(x) = \sqrt[r]{y-1}$$

$$g(x) = x^r + 1 + \sqrt{x^r + 1}$$

$$\frac{x^r + 1}{x^r} \cdot \frac{\sqrt{x^r + 1}}{\sqrt{x^r + 1}} = 1r$$

$$x^r + 1 - 1r = 0 \quad \begin{matrix} + = -r \\ - = r \end{matrix}$$

$$\sqrt{x^r + 1} = -r \quad \times$$

$$\sqrt{x^r + 1} = r$$

$$x^r + 1 = 1 \Rightarrow x = 1$$

$$g(1r) \rightarrow g(x) = 1r$$

$$x^r = 1r \rightarrow 1 + r = 1r$$

$$g^{-1}(x) = 1r$$

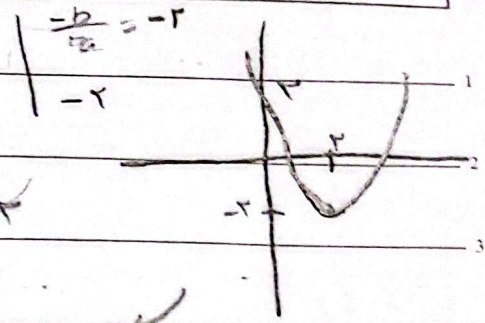
$$f) \quad y = x^2 \pm rx + r$$

$$y = (x-r)^2 - r$$

$$(x_1-r)^2 - r = (x_2-r)^2 - r$$

$$(x_1-r)^2 = (x_2-r)^2$$

$$x_1 = \pm x_2 \quad \text{بیک به بیک نیست}$$



د)

$$الف) \quad y = \frac{rx+1}{x-r} \rightarrow \text{یک به یک و معکوس}$$

$$x = \frac{-ry+1}{y-r} \rightarrow y = \frac{-rx+1}{x-r}$$

$$ج) \quad y = \frac{r+rx}{x+r} = \frac{rx+r}{x+r} = r$$

بیک به یک و معکوس

د)

$$الف) \quad y = \sqrt{x-r} \quad \sqrt{x_1-r} = \sqrt{x_2-r}$$

$$x = \sqrt{y-r} \quad x_1-r = x_2-r \Rightarrow x_1 = x_2$$

$$x^2 + r = y$$

$$ج) \quad y = x^2 - rx + r \quad x \in [r, +\infty)$$

$$y = (x-r)^2 - 1$$

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

$$\sqrt{x+1} = y-r \quad y = \sqrt{x+1} + r$$

