

$$(1) \quad y = x + [x] \rightarrow [y] = 2[x] \xrightarrow{\text{فرض}} x = y + [y] \rightarrow y = x - 2[x] \rightarrow f^{-1}(x) = x - 2[x]$$

$$x - 2[x] = x + [x] \rightarrow 3[x] = 0 \rightarrow x \in [0, 1) \rightarrow \text{در بیشتر نقاط متقاطع}$$

$$2) \quad x = 2n - \frac{3}{4} \rightarrow n = \frac{3}{4} \rightarrow f \circ f^{-1}\left(\frac{3}{4}\right) = \frac{3}{4} \rightarrow \text{معادله جواب ندارد چون } \frac{3}{4} \text{ در بردار نیست}$$

$$(2) \quad \frac{a}{4} = -\frac{b}{5} \rightarrow a = -b \rightarrow a + b = 0 \rightarrow \text{تابع وارونش مساوی اند}$$

$$f \circ f^{-1}(5 - \sqrt{4}) = f \circ f^{-1}(5 - \sqrt{4}) = 5 - \sqrt{4}$$

$$\frac{mx + 3}{x + m + 3} = x \rightarrow mx + 3 = x^2 + mx + 3x \rightarrow x^2 + 3x - 3 = 0 \rightarrow S = -3 \quad P = -3 \quad (3)$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} = \frac{S}{P} = 1$$

$$f(x) = |2x + 5| - |5x - 2|$$

$$f(x) = -3x + 7, \quad x \geq \frac{2}{5}$$

$$f^{-1}(x) = \frac{x - 7}{-3}, \quad x \leq \frac{19}{5}$$

$-\frac{5}{2}$	$\frac{2}{5}$
$3x + 7$	$-3x + 7$
$ $	$ $
$5x + 3$	0

نزولی

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

$$\hookrightarrow y = 2f\left(\frac{x}{2}\right) - 1 \rightarrow f\left(\frac{x}{2}\right) = \frac{y+1}{2} \rightarrow \frac{x}{2} = f^{-1}\left(\frac{y+1}{2}\right) \rightarrow x = \frac{1}{2} f^{-1}\left(\frac{y+1}{2}\right) \xrightarrow{g^{-1}(y)=x}$$

$$g^{-1}(y) = \frac{1}{2} f^{-1}\left(\frac{y+1}{2}\right) \rightarrow a = \frac{1}{2}, \quad b = 1, \quad c = 2, \quad d = 0 \rightarrow \frac{2 \times \frac{1}{2} + 0}{2 \times 1} = \frac{1}{2}$$

$$y = x + 2\sqrt{x} + 1 - 1 \rightarrow y = (\sqrt{x} + 1)^2 - 1 \rightarrow (\sqrt{x} + 1)^2 = y + 1 \rightarrow \sqrt{x} = \sqrt{y+1} - 1 \rightarrow x = (\sqrt{y+1} - 1)^2 \xrightarrow{\text{فرض}} y = (\sqrt{x+1} - 1)^2, \quad x \geq 0$$

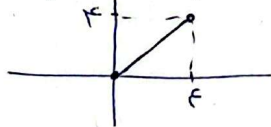
تابع معکوس $\leftarrow$ فقط در $y = x$ معکوس خود را قطع می کند

$$x - 1 + 2^x = x \rightarrow 2^x = 1 \rightarrow x = 0 \rightarrow \text{در یک نقطه متقاطع}$$

$$f^{-1}(x) = t \rightarrow f(t) = x = t^3 + 4t \rightarrow f^{-1}(x) - x \geq 0 \rightarrow t - (t^3 + 4t) \geq 0 \rightarrow (1 - t^2 - 4)t \geq 0 \rightarrow t(t^2 + 3t) \leq 0 \rightarrow t(t^2 + 3) \leq 0 \rightarrow \frac{0}{-4} + \rightarrow t \in (-\infty, 0] \rightarrow \text{یک عدد صحیح نامفرد}$$

$$f^{-1}(x+4) = x-3 \rightarrow f(x-3) = x+4 \rightarrow f(t) = t+4 \rightarrow -t + \sqrt{t+4} = t+4 \rightarrow (t+4)^2 = t+3 \rightarrow 4t^2 + 8t + 16 = t+3 \rightarrow 4t^2 + 7t + 13 = 0 \rightarrow t = \frac{-7 \pm \sqrt{49 - 208}}{8} \rightarrow t = -3 \text{ و } t = -\frac{11}{4}$$

دامنه به صورت $x \geq -3$ می باشد پس فقط $x = -3$ میخورد دارن پس یک نقطه

$$\sqrt{y} = r - \sqrt{x} \rightarrow y = (r - \sqrt{x})^2 \rightarrow f \circ f(x) = (r - \sqrt{(r - \sqrt{x})^2})^2 \rightarrow f \circ f(x) = (r - |r - \sqrt{x}|)^2 \rightarrow (r - r + \sqrt{x})^2 = f \circ f(x) \rightarrow f \circ f(x) = |x|$$


$\leftarrow D_f = [0, +\infty) \leftarrow$