

(۲) (۱) $y = x + [x] \rightarrow [y] = 2[x] \xrightarrow{\text{فرض}} x = y + [y] \rightarrow y = x - 2[x] \rightarrow$
 $f^{-1}(x) = x - 2[x]$ $x - 2[x] = x + [x] \rightarrow 3[x] = 0 \rightarrow x \in [0, 1) \rightarrow$ در بیشتر نقاط متقاطع

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

(۲) (۲) تابع وارونش مساوی اند $\frac{a}{4} = -\frac{b}{5} \rightarrow a = -b \rightarrow a + b = 0 \rightarrow$
 $f \circ f^{-1}(5 - \sqrt{4}) = f \circ f^{-1}(5 - \sqrt{4}) = 5 - \sqrt{4}$

(۳) $\frac{mx + 3}{x + m + 3} = x \rightarrow mx + 3 = x^2 + mx + 3x \rightarrow x^2 + 3x - 3 = 0 \rightarrow S = -3 \quad P = -3$
 $\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} = \frac{S}{P} = 1$

(۲) (۲) $f(x) = |2x + 5| - |5x - 2|$
 $f(x) = -3x + 7, x \geq \frac{2}{5}$
 $f^{-1}(x) = \frac{x - 7}{-3}, x \leq \frac{19}{5}$

(۲) (۲) $g(x) = y \rightarrow g^{-1}(y) = x$
 $y = 2f(x) - 1 \rightarrow f(x) = \frac{y+1}{2} \rightarrow x = f^{-1}(\frac{y+1}{2}) \rightarrow x = \frac{1}{3} f^{-1}(\frac{y+1}{2}) \xrightarrow{g^{-1}(y)=x}$
 $g^{-1}(y) = \frac{1}{3} f^{-1}(\frac{y+1}{2}) \rightarrow a = \frac{1}{3}, b = 1, c = 2, d = 0 \rightarrow \frac{\frac{1}{3} \cdot \frac{1}{3} + 0}{2 \times 1} = \frac{1}{3}$

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

(۲) (۷) تابع معکوس فقط در $y = x$ معکوس خود را قطع می کند
 $x - 1 + 2^x = x \rightarrow 2^x = 1 \rightarrow x = 0 \rightarrow$ در یک نقطه متقاطع

$$f^{-1}(n) = t \rightarrow f(t) = n = t^3 + 4t \rightarrow f^{-1}(n) - n \geq 0 \rightarrow t - (t^3 + 4t) \geq 0 \rightarrow (1 - t^2 - 4) \geq 0 \rightarrow -t^2 - 3 \geq 0 \rightarrow t^2 + 3t \leq 0 \rightarrow t(t+3) \leq 0 \rightarrow \frac{0}{-4} + \rightarrow t \in (-\infty, 0] \rightarrow \text{نقطهٔ بحرانی}$$

$$f^{-1}(n+4) = n-3 \rightarrow f(n-3) = n+4 \rightarrow f(t) = t+4 \rightarrow -t + \sqrt{t+4} = t+4 \rightarrow (t+4)^2 = t+4 \rightarrow t^2 + 8t + 16 = t+4 \rightarrow t^2 + 7t + 12 = 0 \rightarrow t = -3 \text{ یا } t = -4$$

دامنه به صورت $t \geq -3$ و فقط $t = -3$ $n = 0$ $n = 0$

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

$D_f = [0, +\infty)$