



(1 الف)  $x \in [0, 1]$

$x_P = [-2, -1) \cup [0, 1)$   $f \circ f^{-1}(x) = x, x \in x_P$  (ب)

$$x = 2x - \frac{4}{x} \rightarrow x = \frac{4}{x}$$

$f(x) = f^{-1}(x)$   $-\frac{b}{x}, \frac{c}{x} \Rightarrow \frac{c}{x} = -\frac{b}{x} \Rightarrow x = -b \rightarrow x = -4$  (ج)  
(ری یساز اول دوم)

$f(x) = f^{-1}(x) \rightarrow -bx + 4 \rightarrow 4x + b$   
 $f \circ f^{-1}(5 - \sqrt{4}) \rightarrow f \circ f^{-1}(5 - 2) = 5 - 2$

$\frac{mx + 4}{x + m + 4} = x \rightarrow mx + 4 = x^2 + mx + 4x \rightarrow x^2 + 4x = 0$  (د)  
 $\frac{c}{2} = -4$

$x^2 + 4x - 4 = 0$   
 $\frac{-4 \pm \sqrt{16 + 16}}{2} = -2 \pm 2$   
 $\frac{c}{2} = -4$

$f(x) = |2x + 5| - |2x - 4|$  (ه)  
 $\frac{-5}{2x-4} \cdot \frac{2}{2x-4} = \frac{2}{2x-4}$

$R_P = (-\infty, \frac{19}{2}] \cup D_P = [\frac{19}{2}, \infty)$

$f^{-1}(x) = x = -\frac{19}{2} + v \rightarrow y = \frac{-x + v}{2} \rightarrow D_P = x_P = (-\infty, \frac{19}{2}]$   
 $x \in (-\infty, \frac{19}{2}]$

$g(x) = T$   $T = 2f(2x) - 1 \rightarrow g(1) = x$  (و)

$f(\frac{1}{x}) = \frac{1}{x} \rightarrow f(\frac{1}{\frac{1}{x}}) = \frac{1}{\frac{1}{x}} = x$   $f(\frac{1}{\frac{1}{x}}) = \frac{1}{g(f)^{-1}} \rightarrow g(T) = \frac{1}{x}$

$\frac{f(\frac{1}{x})}{x} \rightarrow \frac{ac + d}{xb}$   $c = 2, b = 1, a = \frac{1}{x}, d = 0$

$\frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$

$$f(x) = x + \sqrt{x} \Rightarrow x \geq 0 \Rightarrow Rf = Df \rightarrow [0, +\infty) \quad (9)$$

$$f(x) = (\sqrt{x} + 1)^2 - 1 = y \Rightarrow \sqrt{x} + 1 = \pm \sqrt{y+1} \Rightarrow \sqrt{x} = \pm \sqrt{y+1} - 1$$

$$\underline{x \geq 0 \rightarrow \sqrt{x} \geq 0} \quad f(x)^{-1} = (\sqrt{x+1} - 1)^2 \quad Df^{-1} = Rf = [0, +\infty)$$

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

(V) معرزی اول

$$f(x) = y \rightarrow f^{-1} = f \Rightarrow x - 1 + \sqrt{x} = x \Rightarrow x = 0$$

$$f(x)^{-1} \geq x \rightarrow f(x) \geq x \rightarrow x^{\frac{1}{2}} + x \leq x \rightarrow x^{\frac{1}{2}} + x \leq 0$$

$$\rightarrow x^{\frac{1}{2}} + x \leq 0 \rightarrow x \leq 0 \rightarrow x = 0$$

$$f(x) = -x + \sqrt{x+1} \quad Df = [-1, +\infty) \quad Rf = (-\infty, 1] \rightarrow$$

$$f^{-1}(x) \rightarrow f(x+\sqrt{x})^{-1} \rightarrow g(x) \quad f(x+\sqrt{x})^{-1} = x - \sqrt{x} \rightarrow f(x-\sqrt{x}) = x + \sqrt{x}$$

$$\rightarrow -(x-\sqrt{x}) + \sqrt{x-\sqrt{x}+1} = x + \sqrt{x}$$

$$f(x+1) = \sqrt{x+1} \rightarrow \sqrt{x+1} + \sqrt{x+1} = x+1 \quad x=0$$

شکل بر تابع تکرار پس یک جواب دارد

$$\sqrt{x} + \sqrt{y} = 2 \rightarrow f(x) = f^{-1}(y) \rightarrow f \circ f(x) = f \circ f^{-1}(y) = x \quad (10)$$

$$\Rightarrow Df^{-1} = \frac{\sqrt{y}}{2} = 2 - \sqrt{x} \quad x, y \geq 0 *$$

$$2 - \sqrt{x} \geq 0 \quad \sqrt{x} \leq 2 \Rightarrow x \leq 4 *$$

$$* y \Rightarrow 0 \leq x \leq 4$$

