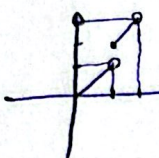


الف) تابع $[x]$ معکوس الی است. بی شمار $(x) \Rightarrow [x] = 0 \Rightarrow x = [x] = 0$

$$f \circ f^{-1}(x) = 2x - \frac{3}{4} \Rightarrow x = 2x - \frac{3}{4} \Rightarrow x = \frac{3}{4}$$


 $f(x) = \frac{3}{4} \Rightarrow$ غیر قابل قبول نیست

$$f(x, b=0) \Rightarrow f(x, -b) \Rightarrow x = -\frac{b}{f}$$

$$\Rightarrow \frac{-b}{f} = \frac{a}{f} \Rightarrow a = -b$$

$$\Rightarrow a+b=0 \Rightarrow f(x) = f^{-1}(x) \Rightarrow f \circ f(x) = f \circ f^{-1}(x) = x \Rightarrow f \circ f(5-\sqrt{6}) = 5-\sqrt{6}$$

$$f^{-1}(x) = f(x) \Rightarrow f(x) = x \Rightarrow \frac{mx+3}{x+m+3} = x \Rightarrow mx+3 = x^2+mx+3x \Rightarrow x^2+3x-3=0$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha+\beta}{\alpha\beta} = \frac{-\frac{3}{1}}{-\frac{3}{1}} = 1$$

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

$$y = -3x+7 \Rightarrow x = -3y+7 \Rightarrow 3y = 7-x \Rightarrow y = \frac{1}{3}x + \frac{7}{3} \Rightarrow f^{-1}(x) = \frac{1}{3}x + \frac{7}{3}$$

$$g(x)=t \Rightarrow g^{-1}(t)=x$$

$$2f(3x)+1=t \Rightarrow f(3x)=\frac{t-1}{2} \Rightarrow f^{-1}\left(\frac{t-1}{2}\right)=3x \Rightarrow \frac{1}{3}f^{-1}\left(\frac{t-1}{2}\right)=x$$

$$g^{-1}(t) = \frac{1}{3}f^{-1}\left(\frac{t-1}{2}\right)$$

$$a = \frac{1}{3}$$

$$b = 1$$

$$c = 2$$

$$d = 0$$

$$\frac{ac+d}{pb} =$$

$$\frac{\frac{1}{3} \cdot 2 + 0}{1 \cdot 1} = \frac{\frac{2}{3}}{1} = \frac{1}{3}$$

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

$$\sqrt{y+1} - 1 = \sqrt{x} \Rightarrow \sqrt{y} = \sqrt{x+1} - 1 \Rightarrow y = x+1 - 2\sqrt{x+1}$$

$$f^{-1}(x) = x+1 - 2\sqrt{x+1} \quad D_{f^{-1}} = D_f = [0, +\infty)$$

$$y = \frac{2^x}{10^0} + \frac{x-1}{10^0} \Rightarrow \text{تابعی نامعکوس است}$$

$$f^{-1}(x) = f(x) \Rightarrow f(x) = x \Rightarrow 2^x + x - 1 = x \Rightarrow 2^x = 1 \Rightarrow x = \log_2 1 \quad \text{یک نقطه}$$

$$f(x) = x^2 + \varepsilon x \text{ معکوس است} \Rightarrow f^{-1}(x) \text{ معکوس است}$$

$$f^{-1}(x) - x \geq 0$$

$$\text{مثال: } f^{-1}(x) = x \Rightarrow f(x) = x \Rightarrow x^2 + \varepsilon x = x \Rightarrow x^2 + \varepsilon x - x = 0 \Rightarrow x(x^2 + \varepsilon - 1) = 0 \Rightarrow x = 0$$

$$\frac{- \quad | \quad +}{- \quad | \quad +} \quad \text{شمار}$$

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

$$f \circ f(x) = f \circ f^{-1}(x) = x$$

$$\sqrt{y} = 2 - \sqrt{x} \quad x \in I$$

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

$$I \cap II = [0, 4]$$

