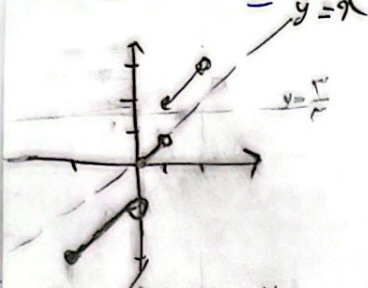


تلف نمودار

بنام خدا

دوازدهم دخت



$$y = x + [x]$$

تابع الیقا معده است به تابع وارن کن هم بر سر اوردن بخار
و ناحیه اول قطع می کنند.

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

$$f(x) = x \Rightarrow x + [x] = x \Rightarrow [x] = 0$$

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

$$x \in D_f^{-1} \Rightarrow x = \frac{3}{2}$$

محاطه جوابدار از زیر جواب به است اگر در بر تابع نمیدان

$$x \in R_f$$

$$y = \frac{ax+b}{cx+d} \Rightarrow \frac{ax+b}{cx+d} = \frac{-b}{c} \Rightarrow a = -b$$

چون a و b قرینه شده پس معکوس تابع به هم برابر است لذا $f(x) = f^{-1}(x)$

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

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

$$f(x) = \frac{mx+n}{x+m+p} \Rightarrow ad \neq bc \Rightarrow m^2 + m \neq 1 \Rightarrow \text{برقرار}$$

$$\frac{mx+n}{x+m+p} = y \Rightarrow x = -\frac{(m+p)y-n}{y-m} \Rightarrow x = \frac{-(m+p)y+n}{y-m} \Rightarrow f^{-1}(x) = \frac{-(m+p)x+n}{x-m}$$

$$\frac{mx+n}{x+m+p} = \frac{(-m-p)x+n}{x-m} \Rightarrow mx^2 - m^2x + \frac{3}{2}x - \frac{3}{2}m = (-m-p)x^2 + (-m-p)(m+p)x$$

$$(2m+3)x^2 - 4m - (4m+9)x - 9 \Rightarrow (2m+3)x^2 - (4m+9)x - 9 - 4m = 0$$

$$\frac{1}{a} + \frac{1}{b} = \frac{a+b}{ab} = \frac{\frac{-b}{a}}{\frac{c}{a}} = \frac{4m+9}{-4m-9} = (-1)$$

$$F(x) = \sqrt{(x+d)^2} - \sqrt{(x-r)^2} = F(x) = (x+d) - (x-r) \quad (F)$$

$$\begin{array}{ccc} \frac{+d}{r} & & \frac{r}{d} \\ \hline -x-d+x-r & | & x+d \\ \hline -d-r & | & x+d \\ \hline & & x+d-r \\ & & \hline & & x-r \end{array}$$

$$F^{-1}(x) \Rightarrow f(x) = -x+V \Rightarrow y-V = -x \quad x \in \left[\frac{r}{d}, +\infty\right)$$

$$\Rightarrow \frac{y-V}{-1} = x \Rightarrow y^{-1} = \frac{x-V}{-1} \Rightarrow F^{-1}(x) = \frac{x-V}{-1}$$

$$g(x) = rf(rx) - 1 = t \Rightarrow f(rx) = \frac{t+1}{r} \Rightarrow f^{-1}\left(\frac{t+1}{r}\right) = rx \Rightarrow x = \frac{f^{-1}\left(\frac{t+1}{r}\right)}{r} \quad (a)$$

$$g'(x) = af^{-1}\left(\frac{x+b}{c}\right) + d \quad g(x) = t \Rightarrow g^{-1}(t) = x \Rightarrow g^{-1}(t) = \frac{f^{-1}\left(\frac{t+1}{r}\right)}{r} \Rightarrow$$

$$\frac{ac+d}{rb} = ? \Rightarrow \frac{r\left(\frac{1}{r}\right) + 0}{r} = \left(\frac{1}{r}\right) \quad \Rightarrow \quad \begin{array}{l} a = \frac{1}{r} \\ b = 1 \\ c = r \\ d = 0 \end{array}$$

مشتق دارم

$$F(x) = y = x + \sqrt{x+1} = (\sqrt{x+1})^2 - 1 \Rightarrow y+1 = (\sqrt{x+1})^2 \Rightarrow \sqrt{x+1} = \sqrt{y+1} \quad (4)$$

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

$$D F^{-1}(x) = [-1, +\infty)$$

$$y = x - 1 + 2 \Rightarrow \text{محل برخورد دایره و خطوط}$$

$$x = x - 1 + 2 \Rightarrow x = 1 \Rightarrow \boxed{x = 0}$$

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

$$f(x) = x^3 + \varepsilon x \quad \text{تابع } f \text{ اکثراً صعودی است} \quad (1)$$

$$\begin{aligned} f(x) &\geq f(f^{-1}(x)) \Rightarrow f(x) \leq x \Rightarrow x^3 + \varepsilon x \leq x \Rightarrow \\ x^3 + \varepsilon x &\leq 0 \Rightarrow x(x^2 + \varepsilon) \leq 0 \Rightarrow \end{aligned}$$

$$x \leq 0 \Rightarrow \text{تعداد مسیح نانبه}$$

$$x \leq 0 \Rightarrow \text{صفر باشد}$$

$$y = x \Rightarrow y = -x + \sqrt{x + \varepsilon} + \varepsilon = -(x - \sqrt{x + \varepsilon} - \varepsilon) = -(x + \varepsilon - \sqrt{x + \varepsilon} - \varepsilon) \Rightarrow \text{سوال 9}$$

$$y = \left(\sqrt{x + \varepsilon} + \frac{1}{\varepsilon} \right)^2 - \frac{11}{\varepsilon} \Rightarrow y = \left(\sqrt{x + \varepsilon} - \frac{1}{\varepsilon} \right)^2 - \frac{11}{\varepsilon} \Rightarrow y + \frac{11}{\varepsilon} = \left(\sqrt{x + \varepsilon} - \frac{1}{\varepsilon} \right)^2 \Rightarrow$$

$$\frac{1}{\varepsilon} + \sqrt{\frac{11}{\varepsilon} - y} = \sqrt{x + \varepsilon} \Rightarrow \left(\frac{1}{\varepsilon} + \sqrt{\frac{11}{\varepsilon} - y} \right)^2 - \varepsilon = x \Rightarrow f^{-1}(x) = \left(\frac{1}{\varepsilon} + \sqrt{\frac{11}{\varepsilon} - x} \right)^2 - \varepsilon \quad (2)$$

$$x \rightarrow x + \varepsilon \Rightarrow g(x) = \left(\frac{1}{\varepsilon} + \sqrt{\frac{11}{\varepsilon} - x} \right)^2 - \varepsilon \Rightarrow \left(\frac{1}{\varepsilon} + \sqrt{\frac{11}{\varepsilon} - x} \right)^2 = x + 1 \Rightarrow$$

$$\frac{1}{\varepsilon} + \frac{11}{\varepsilon} - x + \sqrt{\frac{11}{\varepsilon} - x} = x + 1 \Rightarrow$$

$$2x + \frac{1}{\varepsilon} = \sqrt{\frac{11}{\varepsilon} - x} \Rightarrow \frac{1}{\varepsilon} - x = \varepsilon x^2 + 2x + \frac{1}{\varepsilon} \Rightarrow \varepsilon x^2 + 3x = 0 \Rightarrow x(\varepsilon x + 3) = 0$$

$$\Rightarrow \begin{cases} x = 0 \\ x = -\frac{3}{\varepsilon} \end{cases}$$

$$x \geq 0 \text{ و } y \geq 0$$

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

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

سوال

(1)

$$D_f = [0, 4] \Rightarrow R_f = [0, 4]$$

$$f \circ f(x) = \left(2 - \sqrt{(2 - \sqrt{x})^2} \right)^2 = (2 - |2 - \sqrt{x}|)^2 = (x - 2 + \sqrt{x})^2 = x \quad x \in [0, 4]$$

$$\begin{aligned} f \circ f(x) &\Rightarrow x \in D_f, f(x) \in D_f \\ [0, 4] &\quad (2 - \sqrt{x})^2 \in [0, 4] \\ &\Rightarrow x \in [0, 4] \end{aligned}$$

راه آسون تر: $\sqrt{x} + \sqrt{y} = 2$ همواره با هم حرکت می کنند برابر است پس

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

$$[0, 4] \leftarrow x \in R_f \leftarrow x \in D_f$$