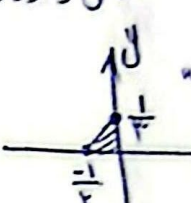


$y = 3x - 1$ $y + 1 = 3x$ $3y = 2x + 1 \Rightarrow y = \frac{2x+1}{3}$ (۲)
 $x=0 \Rightarrow y = \frac{2(0)+1}{3} = \frac{1}{3}$
 $y=0 \Rightarrow 0 = 2x+1 \Rightarrow x = -\frac{1}{2}$

 $S = \frac{1}{2} \times \frac{1}{2} \times \frac{1}{3} = \frac{1}{12}$ ✓

چون رانده فقط خود او به از آن را شامل می شود و دیگر کسی نیست. (۲)
 $y = (x-1)^2 + 2 \Rightarrow y-2 = (x-1)^2 \Rightarrow \sqrt{y-2} + 1 = x$ $y = \sqrt{x-2} + 1$ ✓
 دامنه تابع $x = \frac{-b}{2a} = 1$ $y_{min} = 1 - 2 + 2 = 1 \Rightarrow Df(x) = [1, +\infty)$ ✓
 $y = \sqrt{x-2} + 1$ $x=3 \Rightarrow y_{min} = 9 - 4 + 2 = 7 \Rightarrow Df(x) = [4, +\infty)$ ✓

$f(x) = 2x - \sqrt{4x^2 - 12x + 12} = 2x - 2\sqrt{x^2 - 3x + 3} \Rightarrow f(x) = 2x - 2|x-2|$ (۱, ۲, ۵)
 $f(x) = \begin{cases} 4 & x \geq 2 \\ 4x - 4 & x < 2 \end{cases}$ $S = \frac{1}{2} \times 4 \times \frac{3}{2} = 3$
 $y' = 4x - 4 \Rightarrow y + 4 = 4x \Rightarrow y' = \frac{x}{2} + 1$ ✓
 $Df = Rf = (-\infty, 4]$

$f(x_1) = f(x_2) \Rightarrow \frac{x_1}{\sqrt{x_1^2 - 5}} = \frac{x_2}{\sqrt{x_2^2 - 5}} \Rightarrow \frac{x_1^2}{x_1^2 - 5} = \frac{x_2^2}{x_2^2 - 5} \Rightarrow x_1^2 = x_2^2$ (۲)
 $y\sqrt{x^2 - 5} = x \Rightarrow y^2(x^2 - 5) = x^2 \Rightarrow y^2x^2 - 5y^2 = x^2 \Rightarrow y^2x^2 - x^2 = 5y^2$
 $\Rightarrow x^2(y^2 - 1) = 5y^2 \Rightarrow x^2 = \frac{5y^2}{y^2 - 1} \Rightarrow f^{-1}(x) = \sqrt{\frac{5y^2}{y^2 - 1}}$ ✓

$g(x) = \begin{cases} x^2 - 4x + k & : x \geq 2 \\ -x^2 + 4x + 2k & : x < 2 \end{cases}$ $x = 2 \Rightarrow f^{-1} + k \Rightarrow y = k - 4$ (۲)
 $x=2 \Rightarrow y = -4 + 8 + 2k = 4 + 2k$
 $k - 4 \geq 4 + 2k \Rightarrow -8 \geq 2k \Rightarrow -4 \geq k$ ✓

محوارکها فرضی

$$f(x) = \begin{cases} \frac{1}{x} & x > 0 \\ \frac{1}{x} & x < 0 \end{cases} \rightsquigarrow f^{-1}(x) = \begin{cases} \frac{1}{x} & x > 0 \\ \frac{1}{x} & x < 0 \end{cases} \Rightarrow \begin{aligned} x > 0 &\rightarrow ax + bx = \frac{1}{x} \\ x < 0 &\rightarrow ax - bx = \frac{1}{x} \end{aligned}$$

$$\Rightarrow \frac{1}{x}x + bx = \frac{1}{x}x \Rightarrow bx = \frac{1}{x}x - \frac{1}{x}x \Rightarrow b = -\frac{1}{x}$$

$$ab = \frac{1}{x}x \Rightarrow \frac{1}{x} = \frac{-1}{x} \Rightarrow \frac{-1}{x} = \frac{1}{x}$$

$$\downarrow \frac{1}{x}x = \frac{1}{x}x \Rightarrow a = \frac{1}{x}$$

$$f(x) = \frac{1}{x+1} \rightarrow (1, -1) \Rightarrow -1 = \frac{1}{1+m} \Rightarrow -m-1=1 \Rightarrow m=-2$$

$$y = \frac{f(f^{-1}(x)) + f^{-1}(x)}{x} \quad \text{نقطه مضار ادله} \quad x = x + f^{-1}(x)$$

$$\Rightarrow f^{-1}(x) = 0 \Rightarrow f(0) = x, f(x) = \frac{1}{x-1} \Rightarrow f(0) = \frac{1}{0-1} = -1$$

$$\frac{x}{1} = t \Rightarrow x = 1t \rightarrow f(1-t) = 1-g(t) \Rightarrow g(t) = 1-f(1-t)$$

$$g(t) = f \Rightarrow g^{-1}(t) = 1-t \rightarrow 1 = 1-f(1-t) \Rightarrow f(1-t) = 0$$

$$\Rightarrow f^{-1}(0) = 1-t$$

$$\frac{1}{1-t} + \frac{1}{1-t} = 1-t + 1-t = 2-2t$$

$$y = \frac{1}{1-x} \rightsquigarrow \text{کدیر نسبت به متغیرها} \rightarrow y_1 = -\frac{1}{1-(-x)} \Rightarrow y_1 = -\frac{1}{1+x}$$

$$y_1 = \frac{1}{1+x} \rightsquigarrow \text{در ادر بر ادر} \rightarrow y_1 = \frac{1}{1+x} = \frac{1}{1+x}$$

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

$$\Rightarrow x^2 - 1x - 1 = 0 \rightarrow x_1 + x_2 = \frac{-b}{a} = 1$$

$$f(x) = x + f[x] \rightsquigarrow x \in [n, n+1) \Rightarrow y = [1n, 1n+1)$$

$$\Rightarrow f^{-1}(x) = x - f\left[\frac{x}{1}\right] = g(x)$$

$$\Rightarrow (f-g)(x) = x + f[x] - x + f\left[\frac{x}{1}\right]$$

به راه حل بدین توجه کن!

(۱۰)

قرینه نمودار نسبت به $y = x$ همان وارون تابع است

برای وارون کردن متناهی!

$$y = x + f[x] \xrightarrow[\text{برای متناهی}]{\text{این طرفین را}} [y] = [x] + f[x] = x[x] - [x] = \frac{[y]}{5}$$

$$y = x + f \frac{[y]}{5} \rightarrow x = y - f \frac{[y]}{5} \xrightarrow{\text{وارون}} y = x - f \frac{[x]}{5}$$

$$(f - g)(x) = x + f[x] - x + \frac{f}{5}[x] = \frac{f}{5}[x]$$