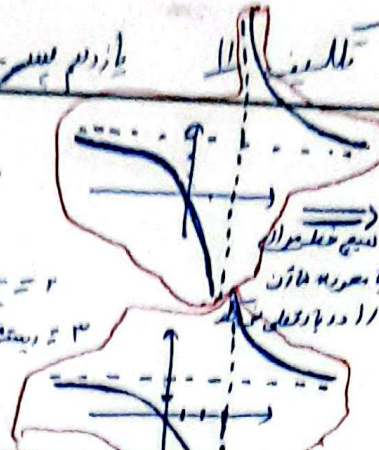


$$y = \frac{x+1}{x-2} \rightarrow \begin{cases} \text{مشتق اول: } \frac{dy}{dx} = \frac{1}{(x-2)^2} \\ \text{مشتق دوم: } \frac{d^2y}{dx^2} = \frac{2}{(x-2)^3} \end{cases}$$

$$f^{-1}(x) = \frac{x+1}{x-2} \rightarrow \begin{cases} \text{مشتق اول: } \frac{d}{dx} = \frac{1}{(x-2)^2} \\ \text{مشتق دوم: } \frac{d^2}{dx^2} = \frac{2}{(x-2)^3} \end{cases}$$



$$f(x) = |x-1| - |x-3|$$

$$\begin{aligned} & \text{نقطه } x=1: f(1) = 0 - 2 = -2 \\ & \text{نقطه } x=3: f(3) = 2 - 0 = 2 \\ & \text{نقطه } x=2: f(2) = 1 - 1 = 0 \end{aligned}$$

$$f^{-1}(x) = \frac{x+2}{2} = \frac{1}{2}x + 1; -2 \leq x \leq 2$$

$$R_{f^{-1}} = D_{f^{-1}} = [-2, 2]$$

$$f(x) = \begin{cases} x^2 + 1 & ; x \geq 1 \\ x - 1 & ; x \leq 0 \end{cases}$$

$$y_1 = x^2 + 1$$

$$y_2 = x - 1$$

$$R_{y_1} = [1, +\infty) \quad R_{y_2} = (-\infty, -1]$$

اشتراک برداشته می باشد

$$f^{-1}(x) = \begin{cases} \sqrt{x-1} & ; x \geq 1 \\ x+1 & ; x \leq -1 \end{cases}$$

$$f(x) = \frac{x^2 + 2x + 1}{x+2} = \frac{(x+1)^2}{x+2}$$

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

$$f(x) = \frac{x}{x^2+1} \quad y = \frac{x_1}{x_1^2+1} \quad y = \frac{x_2}{x_2^2+1}$$

$$\Rightarrow x_1 x_2^2 - x_1^2 x_2 + x_1 - x_2 = 0 \Rightarrow (x_1 x_2 - 1)(x_1 - x_2) = 0$$

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

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

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