

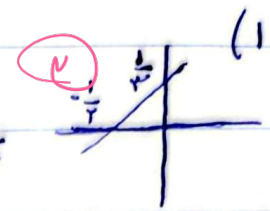
1. $f(x) = 2x$

$f(x) = 4x - 1$

$\frac{1}{x} + \frac{1}{x} = \frac{1}{x}$

$f^{-1} = 2x$

$f^{-1} = \frac{4x+1}{2} - 1 = \frac{4x}{2} + \frac{1}{2} - 1 = 2x - \frac{1}{2}$



$y = x^2 - 2x + 2, x \in [2, +\infty)$

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$\frac{-b}{2a} = 1 \checkmark$

$f^{-1} = x - (x-1)^2 = 2$

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

$Df^{-1} \in [2, +\infty)$

$y = x^2 - 2x + 2 \rightarrow x \in [2, +\infty)$

$\frac{-b}{2a} = 1$

$y^{-1} = \sqrt{2x - 2} + 1 \rightarrow Rf^{-1} \in [2, +\infty)$

$f(x) = 2x - \sqrt{4 - 5x(5 - x)} = 2x - \sqrt{4 - 25x + 5x^2} = 2x - 2\sqrt{5x - x^2}$

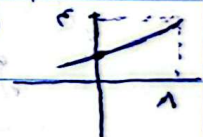
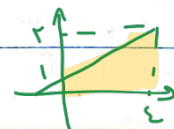
$Pf \in (-\infty, 2]$

$x \in (-\infty, 5]$

$f(x) = 2x - \sqrt{4 - 5x(5 - x)} \Rightarrow f^{-1} = \frac{1}{2}x + 2$

$Rf = (-\infty, 1] = Df^{-1} \frac{1}{2} = 2x$

$f(x) < \varepsilon \Rightarrow f^{-1}(x) = \frac{x+2}{2}, Rf \in (-\infty, 2]$



$S = \frac{1}{2}x^2 \in (4)$

$g = \frac{x}{\sqrt{x^2 - 1}} \Rightarrow \frac{x_1}{\sqrt{x_1^2 - 1}} = \frac{x_2}{\sqrt{x_2^2 - 1}} \Rightarrow x_1^2 = x_2^2 \Rightarrow x_1 = x_2$

$x_1 = \pm x_2 \Rightarrow x_1 = x_2$

$\frac{1}{x} = \frac{1}{x}$

$f^{-1} \rightarrow x = \frac{y}{\sqrt{y^2 - 1}} \Rightarrow g^{-1} = \frac{y}{\sqrt{y^2 - 1}}$

$y = \pm \frac{\sqrt{2x^2}}{\sqrt{x^2 - 1}}$

$g(x) = x^2 - 4x + 4$

$x \geq 2$

$\frac{-b}{2a} = 2$

$20^2 + 4 \cdot 20 + 4 \cdot 20$

$x < 2$

$\frac{-b}{2a} = 2$

$k \geq 3k + 1 \Rightarrow k \leq 9$

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$$f(x) = \begin{cases} x^2 + 1 & x > 0 \\ x & x < 0 \end{cases} \quad f^{-1}(x) = \begin{cases} \frac{1}{2}x & x > 0 \\ \frac{1}{x} & x < 0 \end{cases} \quad (4)$$

$$f^{-1}(x) = \frac{dx}{dx} = \frac{f'(x)}{f'(x)} = \frac{1 \cdot dx}{1 \cdot dx} \Rightarrow x = \frac{1}{x} \Rightarrow x^2 = 1 \Rightarrow x = \pm 1 \quad \text{and } b = -\frac{1}{x}$$

$$f(x) = \frac{x^2 + 1}{x + 1} \quad f(x) = -10 \quad 10m - 10 = 0 \Rightarrow m = -1 \quad (5)$$

$$\Rightarrow x \neq -1, \quad f(-10) = 2 \rightarrow f^{-1} = f \quad y = f \circ f^{-1}(x) = f^{-1}(x) = \frac{x^2 + 1}{x - 1}$$

$$= x \Rightarrow \frac{x^2 + 1}{x - 1} = 0 \quad x^2 + 1 = 0 \Rightarrow x = \pm i$$

$$f(1 - 2x) = 2 - g\left(\frac{x}{2}\right) \Rightarrow g\left(\frac{x}{2}\right) = 2 - f(1 - 2x) \rightarrow g(x) = 4 - 2f(1 - x) \quad (6)$$

$$f = 2 - f(1 - 2x) \quad f'(1 - t) = 2 - 10t \rightarrow f(1 - t) = 2 - 10t \Rightarrow f^{-1}(1 - t) = 2 - 10t$$

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

$$g = \frac{2x - 1}{1 - x} \xrightarrow{\text{GCD}} \frac{2x + 1}{x - 1} \rightarrow \frac{2x + 1}{x - 1} = \frac{2x + 1 - 2x + 2}{x - 1} = \frac{2}{x - 1} \quad (7)$$

$$= \frac{2x + 1}{x - 1} \Rightarrow f(x) = \frac{2x + 1}{x - 1} \Rightarrow f'(x) = 2 = \frac{2g + 1}{g - 1} \Rightarrow g = \frac{1 + x}{x - 1} \quad (8)$$

$$f^{-1}(x) \Rightarrow \frac{1 + x}{x - 1} = \frac{2x + 1}{x - 1} \Rightarrow x^2 + 2x - 1 = 0 \Rightarrow (x - 1)(x + 1) = 0 \Rightarrow x = 1 \text{ or } x = -1$$

$$x^2 - 2x - 1 = 0 \rightarrow \frac{-b}{2} = \frac{-(-2)}{2} = 1$$

$$f(x) = x + f(x) \Rightarrow g(x) = f^{-1}(x) \Rightarrow x - g + f(g) = 0 \Rightarrow g = x - f(x) = g(x) \quad (9)$$

$$[g] = [x + f(x)] \Rightarrow [g] = 2[x] \Rightarrow f(x) - g(x) = 2 + f(x) - x$$

$$+ f_0(x) = 2 + f(x)$$

$$[g] = 2[x] \rightarrow [x] = \frac{[g]}{2}$$

$$f^{-1}(n) = n - 1 \wedge [n]$$

$$f - g = n + f(n) - n + 1 \wedge [n] = f, \wedge [n]$$