

1

$\frac{a}{1}$

$$f(a) = \begin{cases} \frac{a^2 - 1}{a - 1} & a > a \\ 12a - 1 & a \leq a \end{cases} \quad (1)$$

$$f(a) = \frac{(\cancel{a-1})(a+1)}{\cancel{a-1}} = a+1$$

$a = 1$ برای $a = 1$ بوی

$$f(a) = a+1$$

$$f(a) = 12a - 1$$

$$\Rightarrow a+1 = 12a-1 \Rightarrow$$

$$a = 1$$

$\Rightarrow$

$$a > 1 \Rightarrow f(a) = a+1 = 1+1 = 2$$

$$(1, \infty)$$

$$(-\infty, 1) \quad \Leftarrow a \leq 1$$

$$\underline{a = 1}$$

$$\underline{r}$$

$$f(x) = wx + k$$

$$(r)$$

$$f^{-1}(r) = g$$

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

$$f^{-1}(r) = ?$$

$$f(r) = ?$$

$$f(f(r)) = r \Rightarrow wx + k = r + k$$

$$f(r) = r + k$$

$$f(r + k) = r$$

$$f(f(r)) = f(r + k) = r$$

$$w(r + k) + k = r$$

$$wr + wk + k = r$$

$$wr + rk = r$$

$$rk = -wr$$

$$k = \frac{-wr}{r} = -\frac{w}{1}$$

$$f(r) = wr - \frac{w}{1} = \frac{wr - w}{1}$$

$$\mu \quad f^{-1}(a) \Rightarrow y = \mu a + k$$

$$-\mu a = k - y \Rightarrow$$

$$a = \frac{-k + y}{\mu} \Rightarrow a = \frac{y - k}{\mu} \Rightarrow$$

$$f^{-1}(a) = \frac{a - k}{\mu} = \frac{a - (-14)}{\mu} =$$

$$\frac{a + 14}{\mu} = \frac{\mu a + 14}{\mu} = \frac{1 + 14}{2} = \frac{15}{2}$$

$$f^{-1}(k) = \frac{15}{2}$$

$$? \quad f(a) = \frac{a a}{a - 1} \quad A(k, a) \quad (\mu)$$

$$y = \frac{a a}{a - 1} \Rightarrow y a - y = a a \Rightarrow$$

$$y a - a a = y$$

$$a(y - a) = y$$

$$a = \frac{y}{y - a} = \cancel{y a} \cancel{a}$$

$$\frac{a(y)}{y - a}$$

$$y = \frac{a}{a - a} \Rightarrow a = \frac{\mu a}{\mu a - a} \Rightarrow \mu a - a \mu = \mu a$$

$$\frac{-1}{2} \quad 2a^2 - a^2 = 2a \Rightarrow$$

$$2a^2 - 2a - a^2 = 0 \Rightarrow$$

$$a^2 - 2a = 0 \Rightarrow a(a-2) = 0 \Rightarrow$$

$$a = 0$$

$$a-2=0 \Rightarrow a=2$$

$$f = \{(3, 5), (4, 6), (5, 7), (9, 1)\}$$

$$g = \{(3, 2), (1, 4), (9, 5)\}$$

$$f^{-1} = \{(5, 3), (6, 4), (7, 5), (1, 9)\}$$

$$a) f \circ f^{-1}$$

$$= g^{-1} = \{(2, 3), (4, 1), (5, 9)\}$$

$$\{(5, 5), (6, 6), (7, 7), (1, 9)\}$$

$$b) f^{-1} \circ f = \{(3, 3), (4, 4), (5, 5), (9, 9)\}$$

$$c) f \circ g^{-1} = \{(2, 5), (5, 4)\}$$

$$d) g^{-1} \circ f = \{(3, 9), (6, 9), (9, 1)\}$$

$$f = \{(1, 4), (4, 1), (7, 0)\} \quad (a)$$

$$g = \{(1, 1), (4, 3), (7, 2)\}$$

$$h = \{(1, 2), (3, 4), (4, 1), (8, 1)\}$$

$$g^{-1} = \{(1, 2), (3, 4), (2, 7)\}$$

$$\frac{h}{f \circ g^{-1}} = ?$$

$$f \circ g^{-1} \sim \{(1, 4), (3, 1), (2, 0)\} \stackrel{\text{واضع}}{=} \{(4, 1), (1, 3), (0, 2)\}$$

$$h \circ (f \circ g^{-1})^{-1} = \{(4, 2), (1, 4), (0, 1)\}$$