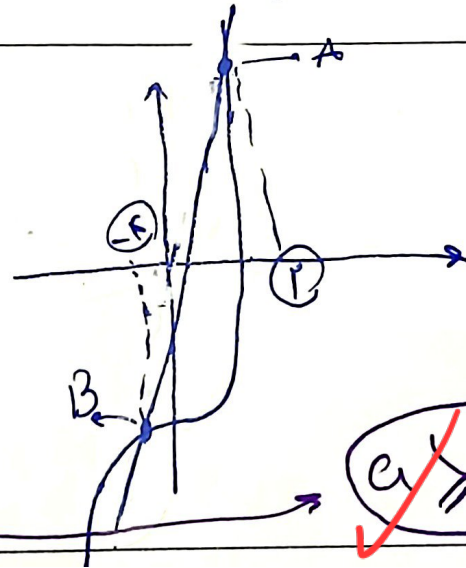


19

نام و نام خانوادگی: فرز سرانی پاسخنامه تشریحی تکلیف شماره 11.. کلاس: یازدهم سر A

$$f(x) = \begin{cases} x^3 - 4 & ; x > 0 \\ |2x - 2| & ; x \leq 0 \end{cases}$$

$$\begin{aligned} x^3 - 4 & \rightarrow |2x - 2| \rightarrow x^3 - |2x - 2| + 4 \\ & \rightarrow (x-2)^3 + 4(x-2)^2 \rightarrow x^2 - 4x + 2 \end{aligned}$$



2

$x \geq -4$

$$f^{-1}(r) = \varepsilon \longrightarrow f(\varepsilon) = r \longrightarrow f(n), r_{n+k} \rightarrow r, |r+1| \rightarrow \underline{k=1.}$$

$$f(n), r_{n-1.} \rightarrow \underline{f(v), r_{n-1.} = 1} \quad \checkmark$$

$$f(f(n)) = f(r_{n-1.}) = r(r_{n-1.}) - 1. = \boxed{r_{n-1.} = f(f(n))} \quad \checkmark$$

(Y)

Y

$$f(n) = \frac{an}{n-1} \quad f^{-1}: A(\gamma a, a) \longrightarrow f \longrightarrow A(a, \gamma a)$$

$$\longrightarrow \gamma a = \frac{a(a)}{a-1} \longrightarrow a\gamma - \gamma a = a^2 \longrightarrow a\gamma - \gamma a = 0 \longrightarrow a(a - \gamma) = 0$$

$$\longrightarrow \cancel{a \neq 0} \quad a = \gamma$$



Y

Y

$$f(m) = \{(3,5), (4,6), (5,7), (6,8)\} \quad g(n) = \{(2,3), (4,5), (6,7)\}$$

الف) $f \circ f^{-1} = \{(4,4), (4,4), (5,5), (6,6)\}$

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

ج) $f \circ g^{-1} = \{(5,4), (6,5)\}$ ✓

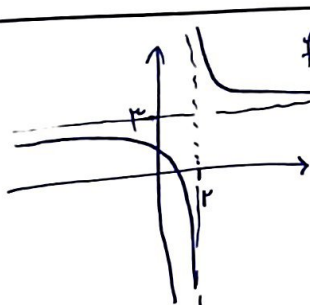
د) $g^{-1} \circ f = \{(3,4), (4,5), (6,7)\}$ ✓

1, 1, 1, 1

$$f = \{(1,2), (2,3), (3,4)\} \quad g = \{(1,2), (2,3), (3,4)\} \quad h = \{(1,2), (2,3), (3,4), (4,5)\}$$

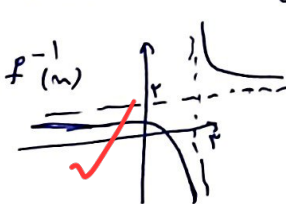
$$\frac{h}{f \circ g^{-1}}$$

$$f \circ g^{-1} = \{(1,2), (2,3), (3,4)\} \rightarrow \frac{h}{f \circ g^{-1}} = \{(1,2), (2,3), (3,4)\}$$

$f(x)$ 
 تابع یک به یک است
 معکوس پذیری

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

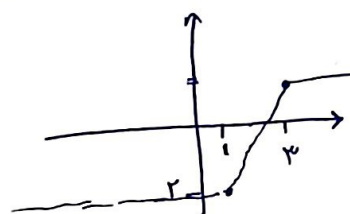
$f^{-1}(x) = \frac{x+1}{x-2}$ ✓

$f^{-1}(x)$ 

$f(x) = |x-1| - |x-2|$

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

$f(x)_{[1,2]} = x-2 \rightarrow y+2 = x \rightarrow \frac{y+2}{2} = x \rightarrow f^{-1}(x) = \frac{x}{2} + 2$ ✓



$Rf: [0, +\infty) \rightarrow y = x^2 + 4 \rightarrow f^{-1} = \sqrt{x-4}$

$Rf: (-\infty, -1] \rightarrow f^{-1}(x) = \begin{cases} \sqrt{x-4} & x \geq 4 \\ \frac{x+1}{2} & x \leq -1 \end{cases}$

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

$f(x) = x^2 - \frac{(x+1)^2}{x+3} \rightarrow \frac{x^2 + 3x^2 - x^2 - x^2 - 2x - 1}{x+3} \rightarrow f(x) = \frac{-2x-1}{x+3}$

هر یک به یک $f^{-1} = \frac{-2y-1}{y+3}$

$f^{-1}(x) = \frac{-2x-1}{x+3} \rightarrow \frac{-2y-1}{y+3} = x \rightarrow b = -2 \rightarrow f^{-1}(x) = \frac{1}{2}$

$f(x) = \frac{x}{x^2+1} \rightarrow yx^2 + y = x \rightarrow yx^2 - x + y = 0$

$\Delta = 1 - 4y^2$

$x = \frac{1 \pm \sqrt{1-4y^2}}{2y}$

چون x و y هم علامتند پس $x = \frac{1 - \sqrt{1-4y^2}}{2y}$

به ازای $x=2$ مقدار $\frac{2}{5}$ به دست می آید

نقطه $(2, \frac{2}{5})$ یک به یک است.