نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ...۱۱... کلاس .....

۱

$a^3 - 4 > 12a - 20$

$a^3 - 12a + 16 > 0$

$a > 2$

۲

$F(4) = 2$
$F(4) = 3(4) + k$ $\Rightarrow 3(4) + k = 2$

$12 + k = -10$

الف ← $3(7) - 10 = 11$

ب ← $F(f(x)) = 3f(x) - 10 = 9x - 30 - 10 = 9x - 40$

۳

روش ۱

$\frac{a(a)}{(a) - 1} = 2a$

$a^2 = 2a^2 - 2a$

$a^2 - 2a = 0$

$a = \begin{cases} 0 \Rightarrow$ غ ق ق $\\ 2 \checkmark \end{cases}$

روش ۲

$F^{-1}(x) = \frac{x}{x - a}$

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

$a \neq 0$

۴

الف ← $\{(5,5), (7,7), (2,2), (4,4)\}$

ج ← $\{(5,4), (2,5)\}$

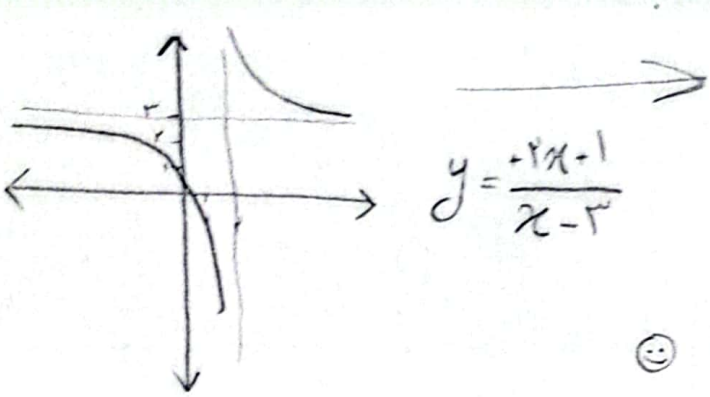
ب ← $\{(9,9), (7,7), (4,4), (3,3)\}$

د ← $\{(2,9), (7,3)\}$

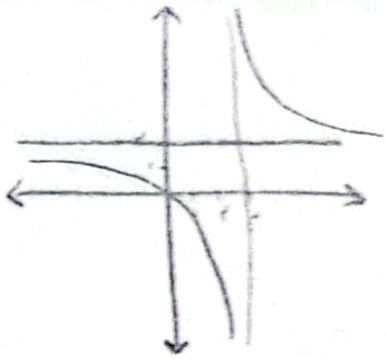
۵

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

۶



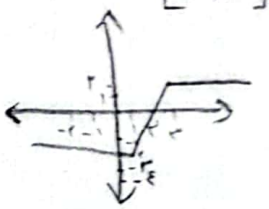
$y = \frac{2x-1}{x-3}$



۷

$$\begin{cases} y=2 & x>3 \\ 2x-3 & 1<x<3 \\ y=-1 & x<1 \end{cases}$$

$[a,b] = [1,3]$

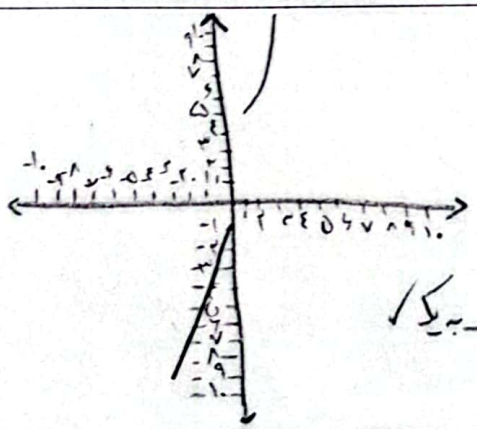


$y = 2x-3 \rightarrow 2x = y+3$

$x = \frac{y}{2} + 2$

$y = \frac{x}{2} + 2$ و $D = [-1,3]$

۸



یک به یک ✓

$$F(x) = \begin{cases} \sqrt[3]{x-3} & x>0 \\ \frac{x+1}{2} & -1<x \end{cases}$$

۹

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

$$F^{-1}(x) = \frac{-3x-1}{-x-3} = -\frac{3x+1}{x+3} = \frac{-6x-2}{2x+6}$$

$$F^{-1}(-1) = \frac{-6(-1)-2}{2(-1)+6} = 1$$

۱۰

$y = \frac{x}{x^2+1}$

اما $F(0.5) = \frac{2}{5}$

$F(2) = \frac{2}{5}$

تابع یک به یک نیست!

$yx^2 + y = x$

$yx^2 - x + y = 0$

$x = \frac{+\sqrt{1-4y^2} - 1}{-2y} = y = \frac{1 \pm \sqrt{1-4x^2}}{2x}, \quad |x| \leq \frac{1}{2}$