

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

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

$$\begin{array}{r|l} a^3 - 12a + 16 & a - 2 \\ a^3 + 2a^2 & a^2 + 2a - 1 \\ \hline 2a^2 + 4a & \\ -12a + 16 & \\ \hline -10a + 16 & \\ 0 & \end{array}$$

$$(a-2)(a^2+2a-1)=0$$

$$(a-2)(a+4)(a-2)=0$$

$$\boxed{a = -4} \quad \boxed{a = 2}$$

$$f(4) = 2$$

$$3 \times 4 + k = 2$$

$$k = -10$$

$$f(x) = 3x - 10$$

$$f(4) = 3 \times 4 - 10 = 2$$

$$3(3x - 10) - 10$$

$$f(f(x)) = 9x - 20 - 10 = 9x - 30$$

$$y = \frac{ax}{x-1}$$

$$x = \frac{ay}{y-1}$$

$$xy - x = ay$$

$$xy - ay = x$$

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

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

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

$$\boxed{a = 2}$$

$$\text{الف: } \{(\omega, \omega) (v, v) (2, 2) (4, 4)\}$$

$$\text{ب: } \{(3, 3) (4, 4) (v, v) (9, 9)\}$$

$$\text{ج: } \{(2, \omega) (\omega, 4)\}$$

$$\text{د: } \{(3, 9) (v, 3) (9, 1)\}$$

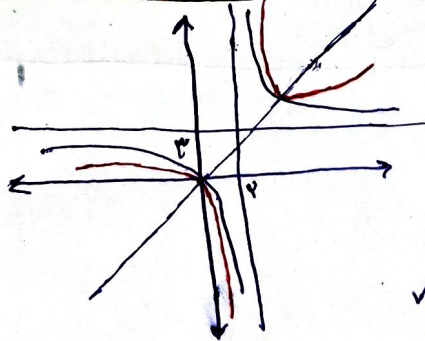
$$h=1 \rightarrow \frac{1}{1} = \frac{1}{1}$$

$$h=\omega \rightarrow \frac{1}{0} \times$$

$$h=3 \rightarrow \frac{1}{1} = \frac{1}{1}$$

$$\frac{1}{1}, \frac{1}{1}$$

$$h=4 \rightarrow \frac{1}{1} = \frac{1}{1}$$



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دارون

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

$$xy - 2x = y + 1$$

$$xy - 2y = 2x + 1$$

$$y(x-2) = 2x+1$$

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

$$\frac{1}{-2} \quad \frac{3}{2x-2} \quad \frac{3}{2}$$

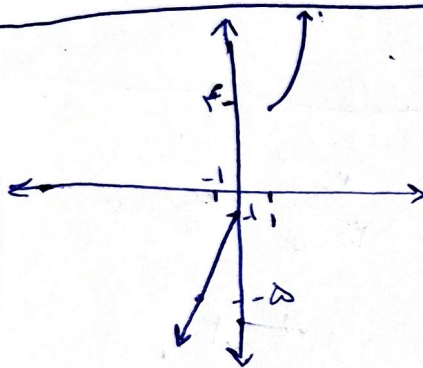
$$y = 2x - 2$$

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

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

$$x = 2y - 2$$

$$2y = x + 2$$



دارون

$$x = y^2 + 2$$

$$y^2 = x - 2$$

$$y = \sqrt{x-2}$$

$$x \geq 2$$

$$x = 4y - 1$$

$$4y = x + 1$$

$$y = \frac{x+1}{4}$$

$$x \leq -1$$

$$x^2 + 1 + 2x^2 + 2x = x^2(x+2) + 2x + 1$$

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

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

$$xy + 2x = -2y - 1$$

$$xy + 2y = -2x - 1$$

$$y(x+2) = -2x-1$$

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

$$\frac{-4(-2)-2}{2(-2)+4} = 2$$

$$b = -2$$

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

$$xy^2 + x - y = 0$$

$$y = \frac{1 \pm \sqrt{1-4x}}{2x} \leftarrow x \in \mathbb{R} - \{0\}$$

$$0 \leftarrow x = 0$$