



آزمایش

۱) $(9, x+2y), (3x-y, -4)$ $(9-3x-y)^{x^2}$
 $-4 = x+2y$ } $\rightarrow 14=7x \rightarrow x=2$
 $y=-3$ } $\boxed{\begin{matrix} x=2 \\ y=-3 \end{matrix}}$

$(-1, -3), (\frac{1}{x}, \frac{1}{y}, \frac{\Delta}{x}, \frac{V}{y})$ $(-1-\frac{1}{x}-\frac{1}{y})^{x^y}$
 $-3 = \frac{\Delta}{x} - \frac{V}{y}$ } $\rightarrow -\epsilon = \frac{2}{x} \rightarrow x = -\frac{1}{2}$
 $y = -1$ } $\boxed{\begin{matrix} x = -\frac{1}{2} \\ y = -1 \end{matrix}}$

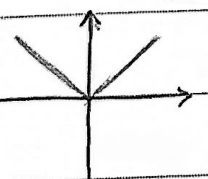
۲) $f = \{(a, 2a), (1, \frac{a+1}{2}), (1, -2), (2, b)\}$

$f(a) + 2f(2) = 3f(1) \rightarrow 2a + 2b = 3a + 3 \rightarrow a = 2b - 3$
 $a + 1 = 2 \rightarrow a = 1$ } $b = 0$

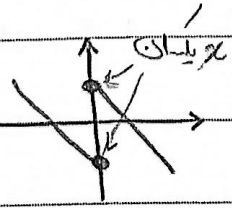
۳) $f = \{(-1, m^2 - 3m), (3, \Delta), (\frac{-1}{m}, -2), (m+1, 4), (2, \epsilon), (m^2 + 2, \epsilon m + 1)\}$

$-2 = m^2 - 3m$ } $m = -1 \rightarrow f = \{(-1, -2), (3, \Delta), (0, 4), (4, \epsilon), (3, -3)\}$ X
 $m = 2 \rightarrow f = \{(-1, -2), (3, \Delta), (2, 4), (2, \epsilon), (4, 9)\}$ X

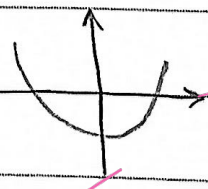
بیانای هیچ مقدار m



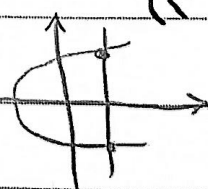
تابع ✓



تابع X



تابع ✓



تابع X

الف) $y = -\sqrt{x+1}$ 15

تابع \checkmark

الز) $x = \frac{y}{\sqrt{1-y^2}}$ 16

الز) y هو عبارة عن علاقة مستقلة!

$$\begin{cases} x_1 = \frac{y_1}{\sqrt{1-y_1^2}} \\ x_2 = \frac{y_2}{\sqrt{1-y_2^2}} \end{cases} \rightarrow \frac{y_1}{\sqrt{1-y_1^2}} = \frac{y_2}{\sqrt{1-y_2^2}} \rightarrow y_1 \neq y_2$$

تابع x \checkmark

الف) $|y| = x$ 17

$$\begin{cases} |y_1| = x \\ |y_2| = x \end{cases} \rightarrow |y_1| = |y_2| \rightarrow y_1 = \pm y_2 \rightarrow y_1 \neq y_2 \text{ (؟)}$$

تابع x \checkmark

الف) $y^3 + 3y^2 + 3y + x^3 + x = 0$ 18

$$\begin{cases} y_1^3 + 3y_1^2 + 3y_1 = -x^3 - x \\ y_2^3 + 3y_2^2 + 3y_2 = -x^3 - x \end{cases}$$

الف) $f(x) = \frac{x^2 + \epsilon x + \Delta}{x^2 + \epsilon x + \nu}$ 19

$$f(\sqrt{3}-1) = \frac{2 + \epsilon - \epsilon\sqrt{3} + \epsilon\sqrt{3} - 1 + \Delta}{2 + \epsilon - \epsilon\sqrt{3} + \epsilon\sqrt{3} - 1 + \nu} = \frac{\epsilon - 2}{3}$$

الف) $f = \{(x, a+b), (1, 2a), (-1, a+2b+1)\}$ 20

تابع ثابت $\rightarrow f(x) = k$
 (عدد حقيقي)

$a+b = 2a \rightarrow a = b$ 21

$2a = a - 2b + 1 \xrightarrow{a=b} 2a = -a + 1 \rightarrow 3a = 1 \rightarrow a = \frac{1}{3}$

الف) $f(x) = \frac{\epsilon x^2 - ax + C + 1}{bx + 2}$ 22

تابع خطي $\rightarrow f(x) = x$

$\epsilon x^2 - ax + C + 1 = bx^2 + 2x$ 23

$$\begin{cases} b = \epsilon \\ a = -2 \\ C = -1 \end{cases} \quad a, b, C = 0$$

$$x = \frac{y}{\sqrt{1-y^2}} \rightarrow \frac{y_1}{\sqrt{1-y_1^2}} = \frac{y_2}{\sqrt{1-y_2^2}} \rightarrow \frac{y_1^2}{1-y_1^2} = \frac{y_2^2}{1-y_2^2} \quad \underline{5}$$

ب

$$\leadsto y_1^2 - \cancel{y_1^2 y_2^2} = y_2^2 - \cancel{y_1^2 y_2^2} \xrightarrow[\text{هم علامت}]{y_1, y_2} y_1 = y_2 \rightarrow \checkmark \text{ راهباً تابعیت}$$

$$y^3 + 3y^2 + 3y = -x^3 - x \xrightarrow{+1} y^3 + 3y^2 + 3y + 1 = -x^3 - x + 1$$

$$(y+1)^3 = -x^3 - x + 1 \rightarrow y+1 = \sqrt[3]{-x^3 - x + 1} \rightarrow y = \sqrt[3]{-x^3 - x + 1} - 1 \rightarrow \text{تابعیت!}$$

ب-4