

الف) $\begin{cases} 9 = 3x - y \\ -4 = x + 2y \end{cases} \rightarrow \begin{cases} 2x - 2y = 8 \\ x + 2y = -4 \end{cases} \rightarrow \begin{cases} 2x - 2y = 8 \\ x + 2y = -4 \end{cases} \rightarrow \begin{cases} 2x - 2y = 8 \\ x = -2 \end{cases} \rightarrow \begin{cases} 2(-2) - 2y = 8 \\ -4 - 2y = 8 \\ -2y = 12 \\ y = -6 \end{cases}$

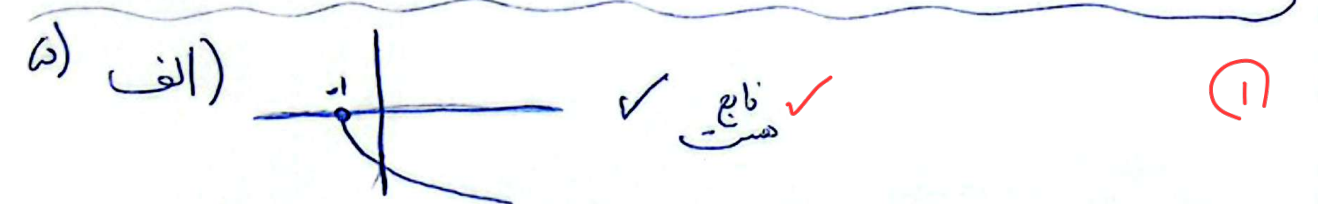
ب) $\begin{cases} \frac{1}{x} - \frac{1}{y} = -1 \\ \frac{5}{x} - \frac{y}{y} = -3 \end{cases} \rightarrow \begin{cases} \frac{y-x}{xy} = -1 \\ \frac{5y-xy}{xy} = -3 \end{cases} \rightarrow \begin{cases} y-x = -xy \\ 5y-xy = -3xy \end{cases} \rightarrow \begin{cases} y-x = -xy \\ 5y-xy = -3xy \end{cases} \rightarrow \begin{cases} y-x = -xy \\ 5y-xy = -3xy \end{cases} \rightarrow \begin{cases} y-x = -xy \\ 5y-xy = -3xy \end{cases}$

$\frac{x}{y} = \frac{1}{1} = 1$ ✓ $\frac{y-x}{xy} = -1 \rightarrow \frac{y}{xy} - \frac{x}{xy} = -1 \rightarrow \frac{1}{x} - \frac{1}{y} = -1$ ✓ $\frac{5}{x} - \frac{y}{y} = -3 \rightarrow \frac{5}{x} - 1 = -3 \rightarrow \frac{5}{x} = -2 \rightarrow x = -\frac{5}{2}$

۲) $a+1 = -2 \rightarrow a = -3$ ✓ $f = \{(-3, 4), (1, 2), (2, b)\}$
 $f(x) + 2f(0) = 2f(1) \rightarrow -4 + 2(b) = 2(-4) \rightarrow 2b = 0 \rightarrow b = 0$ ✓

۳) $m^2 - 3m = -2 \rightarrow m^2 - 3m + 2 = 0 \rightarrow (m-1)(m-2) = 0 \rightarrow m = 1, 2$
 نقاط $(m+1, 4) \rightarrow (2, 4)$ و $(3, 4)$
 نقاط $(m+1, 4) \rightarrow (2, 4)$ و $(3, 4)$
 - در حالت روی نمودار (نقطه) ✓

الف) نیست ✓ ج) نیست ✓ ب) هست ✓
 در این یک اینک ۴۲ بار
 معادله است ۲ بار
 جواب به این معادله ۲ بار
 نام هست و ۲ بار
 برای هر اینک ۱ بار دارد



ب) $\frac{y}{\sqrt{1-y^2}} = 1 \rightarrow y = \sqrt{1-y^2} \rightarrow y^2 = 1-y^2 \rightarrow 2y^2 = 1 \rightarrow y^2 = \frac{1}{2} \rightarrow y = \pm \frac{1}{\sqrt{2}}$

(الف) $x = \sqrt[3]{1} - \sqrt[3]{-1} = 1 - (-1) = 2 \rightarrow \delta = \pm \sqrt[3]{2}$ ✓

(ب) $(x^2+1)^2 - 1 = -x(x^2+1) \rightarrow x^2+1 = \sqrt{-x(x^2+1)+1}$
 ~~$x^2+1 = \sqrt{-x(x^2+1)+1}$~~ ← $\sqrt{-x(x^2+1)+1}$ ✓

(ج) $f(x) = \frac{(x^2+1)(x^2+1)^2+1}{(x^2+1)^2+1} \rightarrow \frac{x^2+1}{(\sqrt{x^2+1})^2+1} \rightarrow \frac{x^2}{x^2+1} = \frac{x^2}{x^2+1}$ ✓

(د) $x^2 - a \rightarrow -x^2 - a = -c \Rightarrow a = -1 \rightarrow x^2 = -x^2 + b - b = -2$ (1)

$x^2 + ax + b = x^2 - a \rightarrow x^2 + (a-x)x + b - a \rightarrow x^2 - 2x - 1 \rightarrow$ (2)

(هـ) $x^3 - x = x(x+1) \rightarrow x(x^2-1) = x(x-1)(x+1) \rightarrow x(x+1)(x-1) = x(x+1) \rightarrow$

$\Delta = 1 - f(-1) \rightarrow \omega \rightarrow x^2 - x - 1 = 0 \rightarrow x = \frac{1 \pm \sqrt{5}}{2}$

$\frac{1 \pm \sqrt{5}}{2} \rightarrow$
 $\frac{1 + \sqrt{5}}{2} + \frac{1 - \sqrt{5}}{2} \rightarrow$
 $\frac{x}{x} = 1$ ✓

~~$a+b = \frac{a+b}{x}$~~
 ~~$\frac{a+b}{x} = \frac{a+b}{x}$~~
 $a+b = xa \rightarrow a=b$
 $a - b + 1 \rightarrow \frac{a-b+1}{a}$
 $a - \frac{b+1}{a} = \frac{a^2 - b - 1}{a}$
 $\left. \begin{matrix} a=b \\ a - \frac{b+1}{a} = \frac{a^2 - b - 1}{a} \end{matrix} \right\} \begin{matrix} a=1 \\ a = \frac{1}{x} \end{matrix}$ ✓

(و) $\frac{ax^2 - ax + c + 1}{bx^2 + cx} = 1 \rightarrow \frac{ax^2 - ax + c + 1}{bx^2 + cx} = 1$ (10)
 $b = x$ (2)
 $b = x$ و $a = -x$
 $c + 1 = 0 \rightarrow c = -1$
 $a + b + c \rightarrow x - x - 1 \rightarrow -1$ ✓

(ز) $x = \frac{y_1}{\sqrt{1-y_1^2}}$
 $x = \frac{y_2}{\sqrt{1-y_2^2}}$
 $\Rightarrow \frac{y_1}{\sqrt{1-y_1^2}} = \frac{y_2}{\sqrt{1-y_2^2}}$
 $\xrightarrow{\text{توان 2 طرفین وسطین}} y_1^2 - y_1^2 y_2^2 = y_2^2 - y_1^2 y_2^2$
 $y_1^2 = y_2^2$
 $y_1 = y_2$ ✓

مخرج سردها مثبت اند پس y_1 و y_2 هم علامتند!
 y_1 و y_2 هم علامتند ✓