

الف) $(9, x+2y) = (3x-y, -4) \Rightarrow \begin{cases} 3x-y=9 \\ x+2y=-4 \end{cases} \Rightarrow \begin{cases} 3x=9+y \\ x=3+\frac{y}{3} \end{cases} \Rightarrow \begin{cases} 3(3+\frac{y}{3})-y=9 \\ 9+y-y=9 \end{cases} \Rightarrow \begin{cases} 9+y-y=9 \\ y=0 \end{cases} \Rightarrow \begin{cases} x=3 \\ y=0 \end{cases} \Rightarrow \frac{x}{y} = \frac{3}{0}$

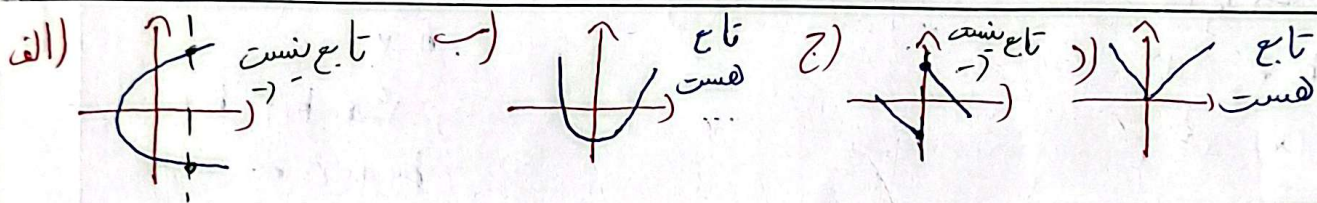
ب) $(-1, -3) = (\frac{1}{x} - \frac{1}{y}, \frac{a}{x} - \frac{y}{y}) \Rightarrow \frac{1}{x} - \frac{1}{y} = -1 \Rightarrow y - x + xy = 0$
 $\Rightarrow \frac{a}{x} - \frac{y}{y} = -3 \Rightarrow ay - vx + 3xy = 0$
 $\Rightarrow y \cdot \frac{a}{x} = 0 \Rightarrow \frac{a}{x} = 0 \Rightarrow \frac{x}{y} = \frac{a}{0}$

$f = \{a, 2a\} (1, a+1) (1, -2) (2, b) \Rightarrow a+1 = -2 \Rightarrow a = -3$

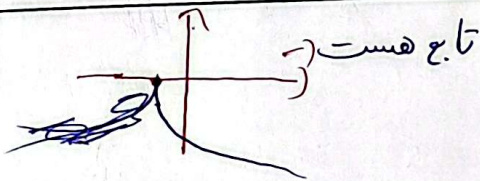
$f(a) + 2f(2) = 3f(1) \Rightarrow 2a + 2b = -6 \Rightarrow -6 + 2b = -6 \Rightarrow b = 0$

$f = \{(-1, m^2-3m), (3, a), (-1, -2), (m+1, 4), (2, 4), (m^2+2, 4m+1)\}$

$m^2-3m = -2 \Rightarrow m^2-3m+2=0 \Rightarrow (m-1)(m-2)=0 \Rightarrow m=1 \rightarrow m+1=2$
 $\rightarrow m=2$



الف) $y = -\sqrt{x+1}$



ب) $x = \frac{y}{\sqrt{1-y^2}}, x=1 \Rightarrow 1 = \frac{y}{\sqrt{1-y^2}} \Rightarrow \sqrt{1-y^2} = y \Rightarrow 1-y^2 = y^2 \Rightarrow 2y^2 = 1 \Rightarrow y = \pm \frac{1}{\sqrt{2}}$
 تابع نیست

الف) $|y|=x \Rightarrow x=1 \Rightarrow |y|=1 \Rightarrow y=\pm 1 \rightarrow$ تابع نیست

ب) $y^3 + 3y^2 + 3y + x^3 - x = 0$
 $y^3 + 3y^2 + 3y = (y+1)^3 - 1 \rightarrow (y+1)^3 - 1 = x^3 - x \Rightarrow (y+1)^3 - 1 = (y_2+1)^3 - 1 \Rightarrow y_1 = y_2$
 تابع هست

$$f(x) = \frac{x^p + px + a}{x^p + px + v} \Rightarrow f(\sqrt{p-v}) = \frac{(\sqrt{p-v})^p + p(\sqrt{p-v}) + a}{(\sqrt{p-v})^p + p(\sqrt{p-v}) + v} = \frac{p + p - p\sqrt{p-v} + p\sqrt{p-v} - 1 + a}{p + p - p\sqrt{p-v} + p\sqrt{p-v} - 1 + v}$$

$$= \frac{2p - 1 + a}{2p - 1 + v}$$

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$$y = px - a \Rightarrow -p = -p - a \Rightarrow a = 1 \quad / \quad x^p + ax + b = f(x) \Rightarrow -p = -1 - 1 + b, b = -p$$

$$px - 1 = x^p + x - p \Rightarrow x^p - px + 1 = 0 \Rightarrow (x+1)(mx^p + nx + c) = 0$$

(مقسوم عليه) \Rightarrow $-1 \rightarrow$

$$\frac{x^p - px - 1}{x+1} = x^p - x - 1 \Rightarrow S = \frac{-b}{a} = 1$$

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$$f = \{(p, a+b), (1, pa), (1, a - pb + 1)\}$$

$$a+b = pa = a - pb + 1 \Rightarrow a+b = a - pb + 1 \Rightarrow b = \frac{1}{p}, a = \frac{1}{p}$$

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$$f(x) = \frac{px^p - ax + c + 1}{bx + p} \Rightarrow \frac{c+1}{p} = 0 \Rightarrow c = -1 \rightarrow f(x) = x = 1 \Rightarrow \frac{p - a - 1 + 1}{b + p} = 1$$

$$f(x) \text{ at } x=0$$

$$\Rightarrow p - a = b + p \Rightarrow b + a = 1$$

$$\Rightarrow \underline{b + a = 1}$$

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