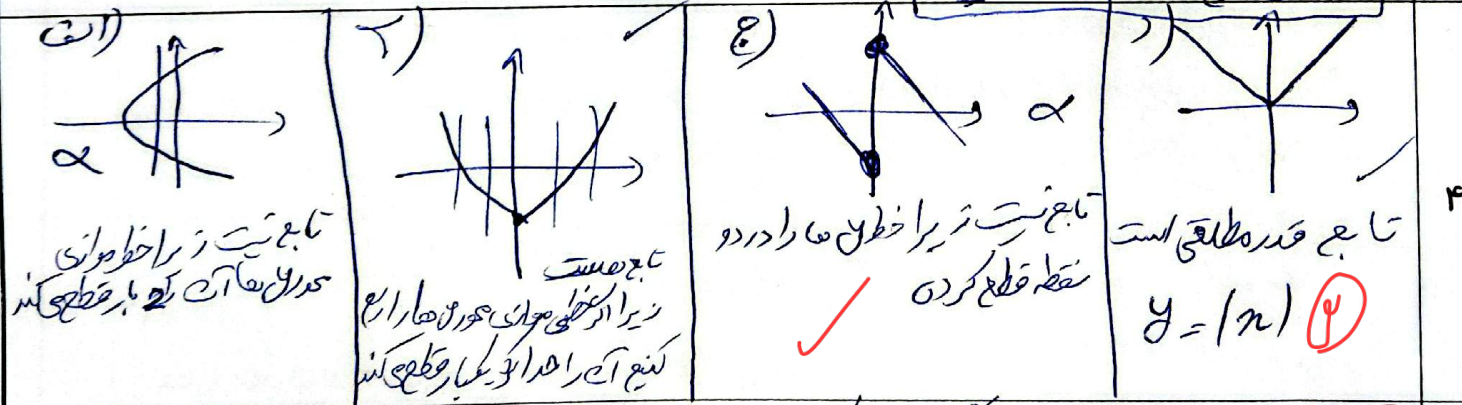


الف) $(3n - y - 4)$ و $(n + 2y)$ $\rightarrow 3n - y - 4 = n + 2y$
 $\rightarrow 2n - 3y = 4$
 $\rightarrow 2n - 3y = 4$ $\rightarrow 2n = 3y + 4$
 $\rightarrow 2(3y + 4) = 3y + 4$
 $\rightarrow 6y + 8 = 3y + 4$
 $\rightarrow 3y = -4$
 $\rightarrow y = -\frac{4}{3}$
 $\rightarrow 2n = 3(-\frac{4}{3}) + 4 = -4 + 4 = 0$
 $\rightarrow n = 0$

ب) $(1, -3)$ و $(\frac{1}{n}, \frac{5}{y})$ $\rightarrow \frac{1}{2} - \frac{1}{y} = -1 \Rightarrow \frac{y - 2}{2y} = -1 \Rightarrow y - 2 = -2y \Rightarrow 3y = 2 \Rightarrow y = \frac{2}{3}$
 $\frac{5}{n} - \frac{3}{y} = -3 \Rightarrow \frac{5y - 3n}{ny} = -3 \Rightarrow 5y - 3n = -3ny$
 $\rightarrow 5y - 3n = -3ny$
 $\rightarrow 5y - 3n = -3ny$
 $\rightarrow 5y - 3n = -3ny$
 $\rightarrow 5y - 3n = -3ny$
 $\rightarrow 5y - 3n = -3ny$

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

$f = \{(-7, m^2 - 3m), (3, 5), (-1, -2), (m+1, 6), (2, 4), (m^2 + 2, 4m + 1)\}$
 $m^2 - 3m = -2 \Rightarrow m^2 - 3m + 2 = 0 \Rightarrow (m-1)(m-2) = 0 \Rightarrow m = 1$
 $m = 1 \Rightarrow \{(-1, -2), (3, 5), (-1, -2), (2, 6), (2, 4), (3, 5)\}$
 $m = 2 \Rightarrow \{(-1, -2), (3, 5), (-1, -2), (3, 6), (2, 4), (4, 9)\}$
 برای مقادیر m تابع نیست



الف) $y = -\sqrt{x+1}$ \rightarrow تابع است زیرا برای هر x در دامنه $x \geq -1$ فقط یک y وجود دارد.

ب) $x = \frac{y}{\sqrt{1-y^2}}$ $\rightarrow x^2(1-y^2) = y^2 \Rightarrow x^2 - x^2y^2 = y^2 \Rightarrow x^2 = y^2(1+x^2) \Rightarrow y = \pm \frac{x}{\sqrt{1+x^2}}$
 تابع نیست برای مقادیر x دو y وجود دارد.

الف) $|y| = x \Rightarrow$ تابع \rightarrow ~~برای مقادیر x که y را مشخص کند~~

$y^3 + 4y^2 + 4y + x^3 + x = 0 \rightarrow y^3 + 4y^2 + 4y + 1 = -x^3 - x + 1 \rightarrow (y+1)^3 = -x^3 - x + 1$

$\rightarrow y+1 = \sqrt[3]{-x^3 - x + 1} \rightarrow y = -1 + \sqrt[3]{-x^3 - x + 1}$ تابع مستقیم

ب) $y^3 + Ay^2 + B = 0 \Rightarrow$ ~~مکان $(3, 0)$ است~~ \rightarrow ~~مکان $(3, 0)$ است~~ \rightarrow تابع \rightarrow ~~مکان $(3, 0)$ است~~

$f(x) = \frac{x^2 + 4x + 5}{x^2 + 4x + 7} \quad f(\sqrt{3} - 2) = ?$

$\frac{(\sqrt{3}-2)^2 + 4(\sqrt{3}-2) + 5}{(\sqrt{3}-2)^2 + 4(\sqrt{3}-2) + 7} = \frac{3+4-4\sqrt{3}+4\sqrt{3}-8+5}{3+4-4\sqrt{3}+4\sqrt{3}-8+7} = \frac{+4}{+6} = \frac{2}{3}$

$f(x) = x^3 + ax + b$ $(-1, -4)$ $y = 3x + a = 0 \rightarrow y = 3x - a$

$-1 - 1 + b = -4 \Rightarrow b = -2$

$x^3 - 2x - 1 = (x+1)(x^2 - x - 1)$

$x^2 - x - 1 = 0 \Rightarrow x = \frac{1 \pm \sqrt{5}}{2}$

$\frac{1+\sqrt{5}}{2} + \frac{1-\sqrt{5}}{2} = \frac{2}{2} = 1$

$x^3 + x - 2 = 3x - 1 \Rightarrow x^3 - 2x - 1 = 0$

$f = \{(2, a+b), (1, 2a), (-1, a-2b+1)\}$ \rightarrow ~~مکان $(2, 0)$ است~~

$a + b = 2a = a - 2b + 1$

$b = a \quad a = -2b + 1$

$-2b + 1 = b \Rightarrow 1 = 3b \Rightarrow b = \frac{1}{3}$

$\Rightarrow a = \frac{1}{3}$

$f(x) = \frac{4x^2 - ax + c + 1}{bx + 3} \stackrel{جاب}{\Rightarrow} x = \frac{4x^2 - ax + c + 1}{bx + 3}$

$bx^2 + 3x = 4x^2 - ax + c + 1$

$b = 4$ $4x^2 + 3x = 4x^2 - ax + c + 1 \Rightarrow c + 1 = 0 \Rightarrow c = -1$

$-a = +3 \Rightarrow a = -3$ $a + b + c = 4 - 3 - 1 = 0$