

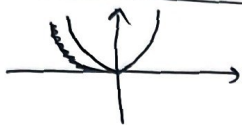
الف) $(x, y) \in f \rightarrow x_1 = x_2 \rightarrow y_1^3 = x_1^3 + x_1 - 1$
 $(x_2, y_2) \in f \rightarrow y_2^3 = x_2^3 + x_2 - 1 \rightarrow y_1 = y_2$ تابع است

ب) $x = \frac{\pi}{2} \rightarrow \frac{\pi}{2} \cos y = y \cos(\frac{\pi}{2}) \rightarrow \cos y = 0 \rightarrow y \in \{k\pi + \frac{\pi}{2}\} \rightarrow$ تابع نیست

ج) $x^2 + y^2 + 2xy = 2xy \rightarrow (x-y)^2 = 0 \rightarrow |x-y| = 0 \rightarrow x-y = 0 \rightarrow x=y$ تابع است

د) $y^3 + 2y = xy^2 + 2x \rightarrow x = \frac{y^3 + 2y}{y^2 + 2} = y \left(\frac{y^2 + 2}{y^2 + 2} \right) = y \rightarrow x=y$ تابع است

الف) $\begin{cases} y \geq 0 \rightarrow x^2 = y \\ y < 0 \rightarrow x^2 = 3y \end{cases}$ تابع است.



ب) $x=1 \rightarrow [y] + [1] = 1 \rightarrow [y] = 0 \rightarrow 0 \leq y < 1$ تابع نیست

$|x-1| \geq 2 \rightarrow \begin{cases} x-1 \geq 2 \rightarrow x \geq 3 \\ x-1 \leq -2 \rightarrow x \leq -1 \end{cases}$

if $0 \leq x \leq -1 \rightarrow 2x^2 - b = a + 2x$

if $x=3 \rightarrow f(x) = 2x^2 - b = a + 2x \rightarrow a+b = 2x^2 - 2x = 12$

$\rightarrow a+b = 12$

$-x^2 - bx + a \geq 0 \rightarrow D_f = [b, a] =$ فاصله بین گره های تابع



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

$ab = \frac{a-a}{-1} = -a \rightarrow a=0$ غلط
 $\rightarrow b=-1$

$a+b = 2-1 = 1$

$ax^2 + bx + c > 0$ دامنه یک بازه از منحنی بی نهایت تا یک عدد است $\rightarrow$ تابع درجه 1



$a=0, b < 0, b(2)+c=0 \rightarrow c = -2b$

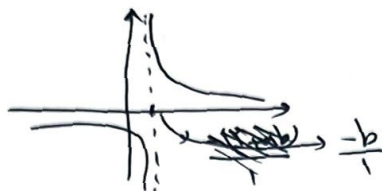
$3a+c-3|b| = 3(0) + (-2b) - 3(-b) = b$



$$\frac{r_{n+1}}{n+b} + a > 0$$

$$x \neq r \text{ and } 0 \rightarrow n+b=0 \rightarrow r+b=0 \rightarrow b=-r$$

$$\rightarrow \frac{(r+a)n + r+ab}{n+b} > 0$$



$$\rightarrow D = (-b, +\infty)$$

$$-b=r \rightarrow \boxed{b=-r}$$

$$\text{الف) } x^3 - x > 0 \rightarrow x(x+1)(x-1) > 0$$

	-1	0	1	
x	-	-	+	+
x+1	-	0	+	+
x-1	-	-	-	0
x^3-x	-	+	-	+

$$\boxed{D_y = [-1, 0] \cup [1, +\infty)}$$

$$\text{ب) } |x|-1 > 0 \rightarrow x > 1 \text{ or } x < -1 \rightarrow \boxed{D_y = \mathbb{R} - [-1, 1]}$$

$$\text{الف) } |x| - [x] \neq 0 \begin{cases} x \notin \mathbb{Z} \rightarrow |x| - [x] \neq 0 \checkmark \\ x \in \mathbb{Z} \rightarrow |x| - [x] = 0 \end{cases} \begin{cases} x > 0 \rightarrow x - [x] = 0 \text{ false} \\ x < 0 \rightarrow -x - [x] \neq 0 \checkmark \\ x = 0 \text{ false} \end{cases}$$

$$\boxed{D = \mathbb{R} - \mathbb{Z}^+} - \{0\} \Rightarrow \boxed{D = \mathbb{R} - \mathbb{N}}$$



$$\rightarrow \boxed{D_y = [0, 1]}$$

$$\left[r_{n-\frac{1}{r}} \right] + \left[r_{n+\frac{r}{r}} \right] > 0 \rightarrow r \left[r_{n+\frac{1}{r}} \right] + \frac{1}{r} > 0 \rightarrow \left[r_{n+\frac{1}{r}} \right] > -\frac{1}{r}$$

$$\rightarrow 0 < \left[r_{n+\frac{1}{r}} \right] \rightarrow 0 \leq r_{n+\frac{1}{r}} \rightarrow \frac{1}{r} \leq n \rightarrow \boxed{D_y = \left[\frac{1}{r}, +\infty \right)}$$

$$1 - \log^{r_{n-a}} \geq 0 \rightarrow \log^{r_{n-a}} \leq 1 \rightarrow r_{n-a} \leq 10 \rightarrow n \leq \omega + \frac{a}{r} \rightarrow c = \omega + \frac{a}{r}$$

$$r_{n-a} > 0 \rightarrow n > \frac{a}{r} \rightarrow b = \frac{a}{r}$$

$$c - b = \omega + \frac{a}{r} - \frac{a}{r} = \boxed{\omega}$$