

الف) $y^3 = 2x^2 + 2x - 1 \rightarrow x_1$
 $\rightarrow x_1 \Rightarrow y_1, x_2 \Rightarrow y_2 \} y_1 = y_2 \rightarrow \checkmark$ تابع است

ج) $x + y - 2\sqrt{x}\sqrt{y} = 0$
 $(\sqrt{x} - \sqrt{y})^2 = 0 \rightarrow \sqrt{x} = \sqrt{y}$
 حد و مرز برقرار $\leftarrow$ تابع است $\checkmark$

ب) $x = \frac{\pi}{r} \rightarrow y = \{ \frac{\pi}{r} + \frac{\pi}{r} \} \rightarrow$ تابع نیست $\checkmark$

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

$\begin{cases} 2x^2 - b & ; |x-1| \geq 2 \rightarrow x \geq 3 \\ & x \leq -1 \\ a + 2x & ; -2 \leq x \leq 1 \end{cases}$
 $f(-1) = 2 - b = -2 + a$
 $\checkmark$ $\boxed{r = a + b}$

$\sqrt{a(x^2 + bx - a)} \rightarrow \begin{cases} b \rightarrow (2b^2 - a) = 0 \\ a \rightarrow -(a^2 + ab - a) = 0 \end{cases}$
 $\frac{b}{a} = \frac{a}{-b}$

$2b^2 = a$
 $a = 0 \rightarrow 2b^2 = 1 - b \rightarrow 2b^2 + b - 1 = 0$
 $a + b = 1 \rightarrow a = 1 - b$
 $b = 1$ و $\frac{1}{2}$
 $b = -1$
 $-1 + 2 = 1 \rightarrow a^2 = 2$

$\sqrt{ax^2 + bx + c} \rightarrow ax^2 + bx + c > 0 \rightarrow$ معادله درجه 2
 $\rightarrow \neq 0$
 $-c = 2b \leftarrow 2b + c = 0 \leftarrow bx + c > 0 \leftarrow a = 0$
 $\rightarrow 3x_0 - 2b + 3b = \boxed{b}$
 ضریب جمله یکنسبت علامت
 با عدد یکتر صغیر است

ان) $|x| - [x] \neq 0 \rightarrow x \in \mathbb{R} - \mathbb{Z}^+, 0 \} \quad R - W \checkmark$
 ب) $\sqrt{y} = 9 - \sqrt{x} \rightarrow x \geq 0, y \geq 0 \rightarrow 9 - \sqrt{x} \geq 0$
 $\rightarrow 9 \geq \sqrt{x} \rightarrow \boxed{11 \geq x \geq 0}$

الف $\log_x^{x-1} \geq 0 \rightarrow x-1 \geq x^0 \rightarrow x \geq \frac{x}{x} \rightarrow D_f = (\frac{1}{x}, \frac{x}{x}] \cup (1, +\infty)$
 $\rightarrow x-1 \leq x^0 \rightarrow x \leq \frac{x}{x} \rightarrow D_f = (\frac{1}{x}, \frac{x}{x}] \cup (1, +\infty)$

الف) $x > 0$ و $3x-1 > 0 \rightarrow x > \frac{1}{3}$, $x \neq 1$ } $x \in [\frac{1}{3}, +\infty) - \{1\}$ (1, 2)
 $\downarrow$
 $\frac{3x-1}{x} > 0 \rightarrow 3x-1 > 1 \rightarrow x > \frac{2}{3}$
 ب) $x < 0$ و $3x-1 > 0 \rightarrow x > \frac{1}{3}$ و $x < 0$ } $\emptyset$

$\frac{1}{4 + \sqrt{|x|} - |x|} \rightarrow \frac{1}{4 - 1 - 1} \rightarrow \frac{1}{2}$
 c) $4 + \sqrt{|x|} - |x| \neq 0 \cdot \xrightarrow{\sqrt{|x|} = t} -(t^2 - t - 4) \neq 0 \rightarrow \begin{matrix} \text{D.D.} \\ t \neq -2, +4 \\ x \neq -9, 9 \end{matrix}$
 $\lim_{x \rightarrow \pm\infty} \frac{1}{4 + \sqrt{|x|} - |x|} = 0 \cdot \xrightarrow{\sqrt{|x|} = t} \frac{1}{-t^2 + t} \rightarrow \sqrt{|x|} > 0 \rightarrow \begin{matrix} -9 < x < 9 \\ \hookrightarrow x \in]-9, 9[\end{matrix}$

با توجه به اینکه عبارت شش درجه دار و توان b - است نتیجه می گیریم

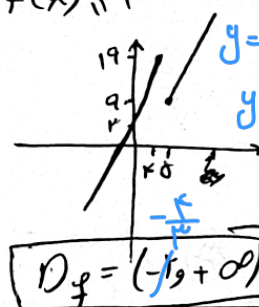
$$\sqrt{\frac{(3+a)x + 2 + ab}{x+b}} \geq 0$$

$$\rightarrow x \neq -b \rightarrow (3+a)x \rightarrow 3+a = 0 \rightarrow a = -3$$

$$\boxed{b = -2}$$

$$f(x) - x + 1 \geq 0 \rightarrow x - f(x) \leq 1$$

$$\begin{cases} f_{X-1} ; [x] > \kappa \xrightarrow{x \geq \Delta} \\ \hookrightarrow \mathbb{R}_+ = [9, +\infty) \\ f_{X+1} ; [x] \leq \Sigma \\ \hookrightarrow \mathbb{R}_+ = (-\infty, 19] \end{cases}$$



برای هر x داریم
صورت قسمت
 $\frac{x}{x+1}$
 $y = \sqrt{k_n - 1 - n + 1} \quad \sqrt{n}$
 $y = \sqrt{k_n + 1 - n + 1} \quad \sqrt{k_n + 1}$
 $x \geq -\frac{k}{m}$
 $-kx \leq k \rightarrow x \geq -\frac{k}{m}$
 $x \leq k \rightarrow x \leq k$
 $x \in [-k, k]$

$$(x + \frac{1}{x})^4 (x^2 + x + 1)$$

$$\frac{(r_{\alpha} + \varepsilon_{\alpha} + 1)^r}{(r_{\alpha} + 1)^r}$$

$$\rightarrow p_{x+1} \neq 0 \rightarrow x \neq -\infty$$

$$D_f = \mathbb{R} - \{-\frac{1}{f}\}$$

چیس از ساده $y = \frac{3}{2x+1}$

$$1 - \frac{1}{2}(r_x - a) \geq 0 \rightarrow 1 \geq \frac{1}{2}(r_x - a) \rightarrow 1 \geq \frac{1}{2} \underbrace{r_x - a}$$

$$L \rightarrow \gamma x \geq a \rightarrow x \geq \frac{a}{\gamma} \rightarrow \cap \leftarrow \overline{a + \frac{a}{\gamma}} \geq x$$

$$\hookrightarrow \frac{c-b}{a+\frac{a}{r}-\frac{a}{r}} = \boxed{a} \quad C = a + \frac{a}{r} \geq x > \frac{a}{r} = b$$