

$$D_f = (-1, 0) \cup (0, 1) \cup (1, +\infty)$$

$$الف) y = \sqrt{\frac{x^2 - 4x}{x^3 - x}}$$

$$\begin{cases} x^2 - 4x \geq 0 \rightarrow x(x-4) \\ x \leq 0, x \geq 4 \end{cases}$$

$$\begin{cases} x^3 - x > 0 \rightarrow x(x^2 - 1) > 0 \\ x > 1, x < -1 \end{cases}$$

$$ب) y = \sqrt{\frac{x^3 - x^2}{x^3 - x}} = \sqrt{\frac{x^2(x-1)}{x^2(x-1)}} = \sqrt{1} = 1$$

$$\begin{cases} x^3 - x^2 \geq 0 \rightarrow x^2(x-1) \geq 0 \\ x^3 - x > 0 \rightarrow x(x^2 - 1) > 0 \end{cases}$$

$$D_f = \mathbb{R} - \{-1, 0, 1\}$$

$$الف) y = \frac{x+1}{\sqrt{x+2}}$$

۱. باید منفی باشد
۲. زیرا فرج صفری شود و بی‌دست
تعریف نشده باشد

$$D_f = (0, +\infty)$$

$$ب) y = \frac{1}{\sqrt{x|x|}}$$

$$x|x| > 0$$

$$x > 0$$

$$D_f = (0, +\infty)$$

$$الف) y = \sqrt{2 - [x]}$$

$$2 - [x] \geq 0$$

$$[x] \leq 2$$

$$x < 3$$

$$D_f = (-\infty, 3)$$

$$ب) y = \frac{1}{\sqrt{2 - [x]}}$$

$$2 - [x] > 0$$

$$[x] < 2$$

$$x < 3$$

$$D_f = (-\infty, 3)$$

$$الف) y = \sqrt{\left[x - \frac{1}{x}\right] + \left[x + \frac{1}{x}\right]}$$

$$\frac{1}{x} - \frac{1}{x}$$

۲

$$ب) y = \sqrt{\left[x - \frac{1}{x}\right] + \left[x + \frac{1}{x}\right]}$$

$$\frac{1}{x} - \frac{1}{x}$$

$$D_f = \left(-\infty, \frac{1}{x}\right]$$

$$الف) y = \frac{x}{\sin x - 1}$$

$$\sin x \neq 1$$

$$x \neq \frac{\pi}{2}$$

$$D_f = \mathbb{R} - \left\{2k\pi + \frac{\pi}{2}\right\}$$

$$ب) y = \frac{x}{\sqrt{\sin^2 x - 1}}$$

$$\sqrt{\sin^2 x} \neq 1$$

$$\sin x \neq \pm 1$$

$$\sin x \neq \pm 1$$

$$D_f = \mathbb{R}$$

$$\text{الف) } y = \sqrt{r S_n - 1}$$

$$r S_n - 1 \geq 0$$

$$r S_n \geq 1$$

$$S_n \geq \frac{1}{r}$$

$$D_f = \left[r k \pi + \frac{k \pi}{r}, r k \pi + \frac{\delta k \pi}{r} \right]$$

$$\text{ب) } y = \sqrt{C_n - 1}$$

$$C_n \geq 1$$

$$D_f = \{ r k \pi \}$$

6

$$\text{الف) } C_y = |u| - r$$

$$-1 \leq |u| \cdot r \leq 1$$

$$r \leq |u| \leq \frac{1}{r}$$

$$r \leq u \leq \frac{1}{r}$$

$$r \geq u \geq -\frac{1}{r}$$

$$D_f = [-\frac{1}{r}, -r] \cup [r, \frac{1}{r}]$$

$$\text{ب) } y = \arcsin \left(\frac{u^r + r u + 1}{u^r + r u + 1} \right)$$

$$-1 \leq (u+r)(u+1) \leq 1$$

$$r \leq (u+r)(u+1) \leq \frac{1}{r}$$

$$D_f = [-r, 0]$$

7

$$\text{الف) } y = \sqrt{r - \log(u-r)}$$

$$u-r \geq 0$$

$$u \geq r$$

$$r - \log_r(u-r) \geq 0 \rightarrow \log_r(u-r) \leq r$$

$$D_f = (r, 11]$$

$$u-r \leq 1$$

$$\text{ب) } y = \log(a^r - u)$$

$$a^r - u > 0$$

$$u(a^r - 1) > 0$$

$$0 < 1 - 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

$$-1 < 1$$

8

$$\text{الف) } y = \frac{r}{e^u + 1} \quad D_f = \mathbb{R}$$

$$\text{ب) } y = \frac{r}{e^u - 1} \quad D_f = \mathbb{R} - \{0\}$$

$$\text{ج) } y = \frac{r}{e^u - r} \quad D_f = \mathbb{R} - \left\{ \frac{1}{r} \right\}$$

$$\text{د) } y = \frac{r}{e^u - r} \quad D_f = \mathbb{R} - \left\{ \log \frac{r}{e} \right\}$$

9

$$\text{الف) } y = (r a + 1)!$$

$$r a + 1 \geq 0$$

$$r a \geq -1$$

$$a \geq -\frac{1}{r}$$

$$D_f = \left[-\frac{1}{r}, +\infty \right)$$

$$D_f = \left\{ a \mid a = \frac{k-1}{r}, k \in \mathbb{W} \right\}$$

$$\text{ب) } y = \left(\frac{r a - r}{r a - 0} \right)!$$

$$\frac{r a - r}{r a - 0} \geq 0 \in \mathbb{W}$$

$$a = + \frac{-\delta \mathbb{W} + r}{-r \mathbb{W} + r}$$

$$D_f = \left\{ a \mid a = \frac{-\delta k + r}{-r k + r}, k \in \mathbb{W} \right\}$$

10