

۱. با توجه به دادن ضریب  $\alpha$  و  $\alpha = 2$  است.

$$f(x) = \sqrt{(a-2)x^2 + ax + b}$$

$$\sqrt{2x+b} \rightarrow \sqrt{2 \times 3 + b} = 0 \quad \boxed{b = -6}$$

۲. (داده)  $\rightarrow$  پس پس سیمی بودن  
 $f(x) = \sqrt{x^2 + 2x + 2 - m^2}$   
 وستی  $\rightarrow$  بالای محور  $(x)$

$$\Delta \rightarrow \leq 0$$

$$4 - 4(2 - m^2) \leq 0$$

$$4 - 8 + 4m^2 \leq 0 \quad m^2 \leq 1 \quad \boxed{1 \leq m \leq 1}$$

$$m_{\max} - m_{\min} = 0$$

۳.  $f(x) = \frac{\sqrt{4 - x^2}}{[x] + [-x] + 1} \rightarrow$  (IR)  $\rightarrow$  رفع  
 $4 - x^2 \geq 0 \quad x^2 \leq 4 \quad \boxed{-2 \leq x \leq 2}$

شماره  $\rightarrow D = \{-2, -1, 0, 1, 2\}$

۴.  $y = \sqrt{x^3 + 3x^2} \rightarrow x^3 + 3x^2 \geq 0 \quad x^2(x+3) \geq 0$

$$\boxed{x \geq -3}$$

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

$$x \in (-\infty, -1] \cup [0, 1] \cup [3, \infty)$$

۵.  $y = \sqrt{|x-2| - 3}$

$$|x-2| \geq 3$$

$$\boxed{x \geq 5}$$

$y = \sqrt{4 - |2-x|}$

$$|2-x| \leq 4$$

$$-4 \leq 2-x \leq 4$$

$$-6 \leq -x \leq 2$$

$$\boxed{-2 \leq x \leq 6}$$

$$a) \rightarrow y = \sqrt{1-x|x|} \quad x|x| \leq 1 \rightarrow x \leq 1$$

$$b) \rightarrow y = \frac{1}{\sqrt{r-|x-a|-1}} \rightarrow \begin{cases} r-|x-a|-1 \geq 0 \\ |x-a| \leq r \\ -r \leq x-a \leq r \\ r \leq x \leq a+r \end{cases}$$

$$c) \rightarrow y = \frac{\sin^2 x - 1}{\cos x} \rightarrow \cos x \neq 0 \quad x \neq \left\{ k\pi + \frac{\pi}{2}, k\pi + \frac{3\pi}{2} \right\}$$

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

$$d) \rightarrow y = \frac{\cos x}{r \cos x - 1} \rightarrow \begin{cases} r \cos x \neq 1 \\ \cos x \neq \frac{1}{r} \end{cases} \quad x \neq \left\{ k\pi \pm \frac{\pi}{r} \right\}$$

$$\downarrow Df = \mathbb{R} - \left\{ k\pi \pm \frac{\pi}{r} \right\}$$

$$e) \rightarrow \frac{x+r}{|rx+1|-|x+r|} \rightarrow \cancel{rx+1} \quad |rx+1| \neq |x+r|$$

$$\frac{(rx+1-x-r)(rx+1+x+r)}{x-r} \neq 0 \quad x \neq \left\{ r, -\frac{r}{r} \right\} \rightarrow Df = \mathbb{R} - \left\{ \frac{r}{r} \right\}$$

$$f) \rightarrow y = \sqrt{|rx+1|-|x+r|} \quad |rx+1| \geq |x+r|$$

$$rx^2 - rx - 1 \geq 0 \quad (rx+1)(x-r) \geq 0 \quad \begin{cases} rx^2 + \epsilon x + 1 \geq x^2 + 4x + 9 \\ x \geq r \\ x \leq -\frac{1}{r} \end{cases}$$

$$g) f(x) = \sqrt{\log_{\frac{1}{a}} \frac{(rx-1)}{a}} \quad \log_{\frac{1}{a}} \frac{(rx-1)}{a} > 0 \rightarrow rx-1 > 1 \rightarrow rx > 2 \rightarrow x > \frac{2}{r}$$

$$rx-1 > 0 \rightarrow x > \frac{1}{r}$$

$$\log_{\frac{1}{a}} (rx-1) \leq 1 \quad rx-1 \leq a \rightarrow x \leq \frac{a+1}{r}$$

$$Df = (k\pi - \frac{r\pi}{r}, k\pi)$$

$$h) y = \log(r \cos x + 1) \rightarrow r \cos x + 1 \geq 0$$

$$\cos x > -\frac{1}{r} \quad x < -1$$

$$i) \rightarrow y = \sqrt{\log \frac{x-1}{x+1}}$$

$$\frac{x-1}{x+1} > 0 \rightarrow \frac{-1+1}{r-1} \rightarrow \begin{cases} x \geq 1 \\ x < -1 \end{cases}$$

$$\log \frac{x-1}{x+1} > 0 \rightarrow \frac{x-1}{x+1} > 1 \quad \frac{x-1-x-1}{x+1} > 0 \rightarrow \frac{r}{x+1} < 0$$