

$$\sqrt{(a-2)x^2 + ax + b} \xrightarrow{-\infty} \frac{2}{-} \xrightarrow{+\infty} \frac{2}{+}$$

تابع خطی است

$$\Rightarrow a-2=0 \Rightarrow a=2$$

$$\sqrt{2ax+b} \xrightarrow{a=2} 4+b=0 \Rightarrow b=-4$$

1

$$\sqrt{x^2+2x-m^2-2} \Delta \leq (x^2) - f(1)(2-m^2) \rightarrow f(m^2-1) \rightarrow f(m^2-4) < 0$$

$$\Rightarrow f(m^2-4) < 0 \rightarrow m = \pm 2 \quad \frac{-2}{+} \quad \frac{+2}{+} \rightarrow -2 < m < 2$$

$$1 - (-1) = 2 \quad \left\{ \begin{array}{l} 1 = \text{بیشترین مقدار ممکن} \\ -1 = \text{کمترین مقدار ممکن} \end{array} \right.$$

2

$$f(x) = \frac{\sqrt{4-x^2}}{(x)+(-x)+1} \rightarrow [x] + [-x] + 1 \neq 0 \rightarrow [x] + [-x] \neq -1 \rightarrow x \notin \mathbb{Z} = \text{اصلی}$$

$$x \notin \mathbb{Z} = -1 \quad 3$$

$$f(x) \geq 0 \rightarrow x^2 \leq 4 \rightarrow -2 \leq x \leq 2 \quad \text{مجموع اعداد صحیح} \quad (5)$$

$$\{-2, -1, 0, 1, 2\}$$

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

$$D_f = [-3, +\infty)$$

$$g = \frac{(x^2-1)(x^2-3x^2)}{x^4-1} \rightarrow \frac{(x^2-1)(x^2-3x^2)}{x^4-1} \geq 0 \rightarrow \frac{(x^2-1)(x^2-3x^2)}{x^4-1} \geq 0$$

4

$$y = \sqrt{|x-2|-3} \rightarrow |x-2|-3 \geq 0 \rightarrow |x-2| \geq 3 \rightarrow x \geq 5 \quad \frac{-1}{-} \quad \frac{0}{+} \quad \frac{1}{+} \quad D_1 = (-\infty, -1] \cup [5, +\infty)$$

5

$$y = \sqrt{4-|x|} \rightarrow 4-|x| \geq 0 \rightarrow |x| \leq 4 \rightarrow x \geq -4 \quad \frac{-4}{-} \quad \frac{0}{+} \quad \frac{4}{+} \quad D_2 = [-4, 4]$$

$$y = \sqrt{1 - x|x|} \rightarrow x|x| \leq 1 \rightarrow x \leq 1 \rightarrow D_f = (-\infty, 1]$$

$$y = \frac{1}{\sqrt{r - |x-0| - 1}} \rightarrow \begin{matrix} r - |x-0| - 1 > 0 \\ \downarrow \\ |x-0| \leq r \end{matrix} \rightarrow \begin{matrix} |x-0| \leq r \rightarrow x-0 \leq r \\ |x-0| \leq r \rightarrow x-0 \leq -r \end{matrix} \rightarrow \begin{matrix} x \leq r \\ x \leq -r \end{matrix} \rightarrow D_f = [r, \infty) \cup (-\infty, -r]$$

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

$$y = \frac{\cos x}{r(\cos x - 1)} \rightarrow \begin{matrix} r(\cos x - 1) \neq 0 \\ \cos x \neq \frac{1}{r} \\ \cos x \neq \frac{\pi}{r}, \frac{5\pi}{r} \end{matrix} \rightarrow R - \left\{ \frac{r\pi}{2} + \frac{\pi}{r}, \frac{r\pi}{2} - \frac{\pi}{r} \right\}$$

$$y = \sqrt{r \sin x - 1} \rightarrow r \sin x - 1 \geq 0 \rightarrow \sin x \geq \frac{1}{r}$$

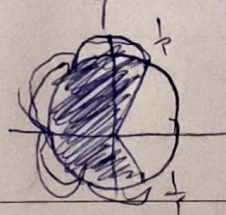
$$D_f = \left[\frac{r\pi}{2} + \frac{\pi}{r}, \frac{r\pi}{2} + \frac{5\pi}{r} \right]$$

$$\sin x \geq \frac{1}{r}$$



$$y = \sqrt{1 - r \cos x} \rightarrow r \cos x \leq 1 \rightarrow \cos x \leq \frac{1}{r}$$

$$D_f = \left[\frac{r\pi}{2} + \frac{\pi}{r}, \frac{r\pi}{2} + \frac{5\pi}{r} \right]$$



$$f(x) = \sqrt{\log \log (x-1)} \rightarrow \log \log (x-1) \geq 0 \rightarrow x > \frac{1}{r}$$

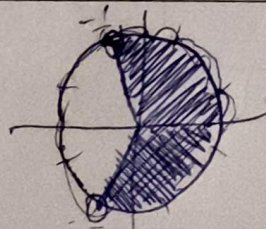
$$\hookrightarrow \log \log (x-1) \geq 0 \rightarrow \log (x-1) \geq 0 \rightarrow x-1 \geq 1 \rightarrow x \geq 2$$

$$D_f = [2, \infty)$$

$$\begin{matrix} x-1 > 1 \rightarrow x > 2 \\ \log (x-1) \leq 0 \\ x-1 \leq 1 \\ x \leq 2 \end{matrix}$$

$$y = \log (r \cos x + 1) \rightarrow r \cos x + 1 > 0 \rightarrow \cos x > -\frac{1}{r}$$

$$R - \left[\frac{r\pi}{2} + \frac{\pi}{r}, \frac{r\pi}{2} + \frac{5\pi}{r} \right]$$



$$y = \sqrt{\log \frac{x-1}{x+1}} \rightarrow \log \frac{x-1}{x+1} \geq 0 \rightarrow \frac{x-1}{x+1} \geq 1 \rightarrow \frac{x-1-x-1}{x+1} \geq 0 \rightarrow \frac{-2}{x+1} \geq 0 \rightarrow x < -1$$

$$\frac{x-1}{x+1} \geq 0 \rightarrow \begin{matrix} x-1 \geq 0 \\ x+1 < 0 \end{matrix} \rightarrow \begin{matrix} x \geq 1 \\ x < -1 \end{matrix} \rightarrow D = (-\infty, -1)$$