

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره ۴ کلاس: پایه دهم ریاضی A

$$f(x) = \sqrt{(a-2)x^2 + ax + b}, D = [3, +\infty) \rightarrow \text{چون یک ریشه دارد پس تاج خط بوده} \rightarrow a-2=0 \rightarrow a=2$$

$$\xrightarrow{a=2} (2-2)x^2 + 2x + b = 2x + b \rightarrow 2x + b \geq 0 \xrightarrow{x=3} (2 \times 3) + b = 0 \rightarrow b = -6$$

$$f(x) = \sqrt{x^2 + 2x + 2 - m^2}, D_f = \mathbb{R}$$

$$\hookrightarrow x^2 + 2x + 2 = (x+1)^2 + 1 \Rightarrow (x+1)^2 + 1 - m^2 \geq 0 \rightarrow (x+1)^2 = 0 \text{ کمترین مقدار}$$

$$1 - m^2 \geq 0 \rightarrow 1 \geq m^2 \rightarrow -1 \leq m \leq 1 \xrightarrow{\text{کمترین } m: -1, \text{ بیشترین } m: 1}$$

$$1 - (-1) = 2$$

$$f(x) = \frac{\sqrt{4-x^2}}{[x] + [-x] + 1} \rightarrow 4-x^2 \geq 0 \rightarrow -2 \leq x \leq 2 \rightarrow \text{عدد صحیح}$$

$$\text{همچون که صفر نمی شود} \rightarrow x - x + 1 = 1 \Rightarrow [x] = x, [-x] = -x \Rightarrow \text{اگر } x \text{ عدد صحیح باشد}$$

$$\{ -2, -1, 0, 1, 2 \} \text{ دامنه شامل عدد صحیح}$$

$$\text{الف)} \sqrt{x^3 + 3x^2} \rightarrow x^2(x+3) \geq 0 \rightarrow \begin{array}{c} -3 \quad 0 \\ - \quad + \end{array} \rightarrow D = [-3, +\infty)$$

$$\text{ب)} y = \sqrt{\frac{(x^2-1)(x^3-2x^2)}{(x^3-1)}} \Rightarrow \frac{(x-1)(x+1)(x-2)x^2}{(x-1)(x^2+x+1)} \rightarrow \begin{array}{c} -1 \quad 0 \quad 2 \quad 3 \\ + \quad - \quad - \quad - \end{array}$$

شماره مثبت

$$D = (-\infty, -1] \cup \{0\} \cup [3, +\infty)$$

$$\text{الف)} y = \sqrt{|x-2| - 3} \rightarrow |x-2| - 3 \geq 0 \rightarrow |x-2| \geq 3 \rightarrow \left. \begin{array}{l} x-2 \geq 3 \rightarrow x \geq 5 \\ x-2 \leq -3 \rightarrow x \leq -1 \end{array} \right\}$$

$$D = (-\infty, -1] \cup [5, +\infty)$$

$$\text{ب)} y = \sqrt{4 - |2-x|} \rightarrow |2-x| \leq 4 \rightarrow -4 \leq 2-x \leq 4 \rightarrow -2 \leq x \leq 6$$

$$D = [-2, 6]$$

$$\text{الف) } y = \sqrt{1-x|x|} \rightarrow 1-x|x| \geq 0 \rightarrow x|x| \leq 1 \xrightarrow{x \geq 0} x^2 \leq 1 \rightarrow -1 \leq x \leq 1 \xrightarrow{x < 0} 0 \leq x \leq 1 \quad \text{I}$$

$$\text{I} \cup \text{II} = (-\infty, 1]$$

$$\xrightarrow{x < 0} -x^2 \leq 1 \rightarrow -x^2 \leq 0 \rightarrow \text{همیشه برقرار} \rightarrow x < 0 \quad \text{II}$$

$$\text{ب) } y = \frac{1}{\sqrt{3-|x-5|-1}} \rightarrow 3-|x-5|-1 > 0 \rightarrow |x-5| < 2 \rightarrow -2 < x-5 < 2 \rightarrow 3 < x < 7$$

$$D = (3, 7)$$

$$\text{الف) } y = \frac{\sin^2 x - 1}{\cos x} \rightarrow \cos x \neq 0 \rightarrow \cos x \neq k\pi + \frac{\pi}{2} \rightarrow D = \mathbb{R} - \left\{ \frac{\pi}{2} + k\pi \mid k \in \mathbb{Z} \right\}$$

$$\text{ب) } \frac{\cos x}{2\cos x - 1} \rightarrow 2\cos x - 1 \neq 0 \rightarrow \cos x \neq \frac{1}{2} \rightarrow D = \mathbb{R} - \left\{ 2k\pi - \frac{\pi}{3}, 2k\pi + \frac{\pi}{3} \right\} \quad \gamma$$

$$\text{الف) } y = \frac{x+3}{|2x+1|-|x+3|} \rightarrow |2x+1|-|x+3| \neq 0 \rightarrow |2x+1| \neq |x+3| \xrightarrow{\text{توان}} 4x^2+4x+1 = x^2+6x+9$$

$$4x^2+4x-6x-8x+1-9=0 \rightarrow 3x^2-2x-8=0 \rightarrow (3x+4)(x-2)=0 \rightarrow D = \mathbb{R} - \left\{ -\frac{4}{3}, 2 \right\}$$

$$\text{ب) } y = \sqrt{|2x+1|-|x+3|} \rightarrow |2x+1|-|x+3| \geq 0 \xrightarrow{\text{توان}} (2x+1)^2 - (x+3)^2 \geq 0 \xrightarrow{\text{تفاضل خارج}} [(2x+1)-(x+3)][(2x+1)+(x+3)] \geq 0 \rightarrow (x-2)(3x+4) \geq 0$$

$$D = (-\infty, -\frac{4}{3}] \cup [2, +\infty)$$

$$f(x) = \sqrt{\log_{\log_{\omega} \frac{1}{\omega}} (2x-1)} \rightarrow \log_{\log_{\omega} \frac{1}{\omega}} (2x-1) \geq 0 \rightarrow \log_{\omega} (2x-1) \leq 1 \rightarrow 2x-1 \leq \omega$$

$$2x-1 > 0 \rightarrow x > \frac{1}{2} \quad \text{II}$$

چون $\frac{1}{\omega} < \omega < 1$ متابع نزولی است
جست و جوی شود

$$x \leq 3 \quad \text{I}$$

$$\text{I} \cap \text{II} \rightarrow D = \left(\frac{1}{2}, 3 \right]$$

$$\text{الف) } y = \log (2\cos x + 1) \rightarrow 2\cos x + 1 > 0 \rightarrow \cos x > -\frac{1}{2} \rightarrow D = \left(2k\pi - \frac{2\pi}{3}, 2k\pi + \frac{2\pi}{3} \right)$$

$$\text{ب) } y = \sqrt{\log \frac{x-1}{x+1}} \rightarrow \frac{x-1}{x+1} > 0 \rightarrow (-\infty, -1) \cup (1, +\infty) \quad \text{I}$$

$$\log \frac{x-1}{x+1} > 0 \rightarrow \frac{x-1}{x+1} > 1 \rightarrow \frac{x-1}{x+1} - 1 > 0 \rightarrow \frac{x-1-(x+1)}{x+1} > 0 \rightarrow \frac{-2}{x+1} > 0 \rightarrow x+1 < 0 \rightarrow x < -1 \quad \text{II}$$

$$\text{I} \cap \text{II} \rightarrow D = (-\infty, -1)$$