

19, 10, 19

المادة: رياضيات

الف) $f(x) = \sqrt{4x+b}$ $\rightarrow \frac{3}{-1+1} f(x) = 0 = \sqrt{4+b}$ (1)

$\rightarrow b = -4$

ب) $\Delta \leq 0 \rightarrow f - f(x-m^2) \leq 0 \rightarrow 1 - 2 + m^2 \leq 0 \rightarrow m^2 \leq 1 \rightarrow m \in [-1, 1]$ (2)

ج) I $x^2 - 2x > 0 \rightarrow \frac{-2}{-1+1} = -2 < x < 2$ II $[x] + [-x] \neq -1 \rightarrow x \in \mathbb{Z}$ (3)

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



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

ب) $\frac{(x^2-1)(x^3-3x^2)}{x^3-1} \geq 0 \rightarrow \frac{(x-1)(x+1)(x^2)(x-3)}{(x-1)(x^2+x+1)}$

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

ج) I $|2-x| \leq 4 \rightarrow -2 \leq x \leq 6$ II $|x-2| \geq 3 \rightarrow x \geq 5$ (5)

$\rightarrow -2 \leq x \leq 4$ $D_f = [-2, 4]$

الف) $|x-2| \geq 3 \rightarrow x \geq 5$ $D_f = (-\infty, -1] \cup [5, +\infty)$ $x \leq -1$

د) الف) $x|x| \leq 1 \rightarrow \begin{cases} x > 0 \rightarrow x^2 \leq 1 \rightarrow -1 \leq x \leq 1 \\ x \leq 0 \rightarrow -x^2 \leq 1 \rightarrow x^2 \geq -1 \rightarrow x \in (-\infty, 0] \end{cases}$ (6)

$\rightarrow D_f = (-\infty, 1]$

ب) I $|x-2| \geq 0 \rightarrow |x-2| \leq 3 \rightarrow -1 \leq x-2 \leq 3$ (7)

II $3 - |x-2| \neq 1 \rightarrow |x-2| \neq 2 \rightarrow \begin{cases} x-2 \neq 2 \rightarrow x \neq 4 \\ x-2 \neq -2 \rightarrow x \neq 0 \end{cases} \rightarrow 2 \leq x \leq 4$ $D_f = [2, 4] - \{0, 4\}$

الف) $\cos x \neq 0 \rightarrow D = \mathbb{R} - \{k\pi + \frac{\pi}{2}\}$ (8)

ب) $2\cos x \neq 1 \rightarrow \cos x \neq \frac{1}{2} \rightarrow D_f = \mathbb{R} - \{k\pi + \frac{\pi}{3}, k\pi - \frac{\pi}{3}\}$

الف) $|2x+1| - |x+3| \neq 0 \rightarrow |2x+1| \neq |x+3|$ (1)

$\rightarrow \sqrt{2x+1} + \sqrt{x+1} \neq \sqrt{2x+1} + \sqrt{x+1} \rightarrow \sqrt{2x+1} - \sqrt{x+1} \neq 0$

$\rightarrow \frac{-\frac{1}{2}}{+\frac{1}{2} - \frac{1}{2} +} \rightarrow n \in \left\{ \frac{1}{2}, \frac{3}{2} \right\}$
 ارفاق!

ب) $|2x+1| - |x+3| \geq 0 \rightarrow |2x+1| \geq |x+3| \rightarrow \sqrt{2x+1} + \sqrt{x+1} \geq \sqrt{2x+1} + \sqrt{x+1}$

$\sqrt{2x+1} - \sqrt{x+1} \geq 0 \rightarrow \frac{-\frac{1}{2}}{+\frac{1}{2} - \frac{1}{2} +} D_f = \left(-\infty, -\frac{1}{2} \right] \cup [2, +\infty)$

I $2x+1 > 0 \rightarrow x > -\frac{1}{2}$ II $\log_a^{(2x+1)} > 0 \rightarrow 2x+1 > 1 \rightarrow x > 0$ (1/5)

III $\log_{\frac{1}{a}} \log_a^{2x+1} \geq 0 \rightarrow \log_a^{2x+1} \geq 1 \rightarrow 2x+1 \geq a \rightarrow x \geq \frac{a-1}{2}$

$D_f = (1, 3]$

عبارت زیر را ساده کنید!

الف) $2\cos x + 1 > 0 \rightarrow \cos x \geq -\frac{1}{2}$

$D_f = \left(2k\pi - \frac{2\pi}{3}, 2k\pi + \frac{2\pi}{3} \right)$

ب) I $\frac{x-1}{x+1} > 0 \rightarrow \frac{-1}{+\frac{1}{2} - \frac{1}{2} +}$

II $\log_{\frac{x-1}{x+1}} \geq 0 \rightarrow \frac{x-1}{x+1} \geq 1 \rightarrow \frac{x-1}{x+1} - 1 \geq 0 \rightarrow \frac{x-1-x-1}{x+1}$

$\rightarrow \frac{-2}{x+1} \geq 0 \rightarrow \frac{-1}{+\frac{1}{2} -} (-\infty, -1]$

$I \cap II \rightarrow D = (-\infty, -1]$

9) $\log_a \log_a^{n-1} \rightarrow n-1 > 0 \rightarrow n > \frac{1}{2}$

$\log_a^{n-1} > 0 \rightarrow n-1 > 0 \rightarrow n-1 > 1 \rightarrow n > 2$

$\log_a \log_a^{n-1} \geq 0 \xrightarrow{\text{منابع در آن مثبت عوض مناسبت!}} \log_a^{n-1} \leq (a) \rightarrow \log_a^{n-1} \leq 1 \rightarrow n-1 \leq a \rightarrow n \leq 4 \rightarrow n \leq 3$

$D_f = (1, 3]$