

$$\alpha=2 \rightarrow f(\alpha)=\sqrt{2\alpha+b}$$

$$\Delta < 0 \rightarrow \times$$

$$\alpha=3 \rightarrow 4+b=0$$

$$\boxed{b=-4}$$

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$$\Delta < 0 \rightarrow f - 1 + fm^2 = 0$$

$$fm^2 = f$$

$$m^2 = 1$$

$$m = \pm 1 \rightarrow 1 - (-1) = \boxed{2}$$

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$$f - x^2 \geq 0$$

$$x^2 \leq f$$

$$\Rightarrow D_f = \{-2, -1, 0, 1, 2\} \quad \Delta \text{ عدد صحیح}$$

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$$\text{الف) } x^3 + 3x^2 \geq 0 \quad x^2(x+3) \geq 0 \quad D_f = [-3, +\infty)$$

$$\text{ب) } \frac{(x^2-1)(x^3-3x^2)}{x^3-1} \geq 0 \quad D_f = [-\infty, -1] \cup [2, +\infty) \cup \{0\}$$

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$$\text{الف) } |x-2| - 3 \geq 0$$

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

$$-3 \leq x-2 \leq 3$$

$$-1 \leq x \leq 5$$

$$D_f = [-1, 5]$$

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$$\text{ب) } 4 - |2-x| \geq 0$$

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

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

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

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

الف) $1 - x|x| \geq 0$

$x|x| \leq 1$

$\Rightarrow D_f = [-\infty, 1]$

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ب) $\sqrt{3 - |x - \Delta|} - 1 \neq 0$

$\sqrt{3 - |x - \Delta|} \neq 1$

$3 - |x - \Delta| \neq 1$

$|x - \Delta| \neq 2$

$x - \Delta \neq 2 \rightarrow \boxed{x \neq \Delta + 2}$

$x - \Delta \neq -2 \rightarrow \boxed{x \neq \Delta - 2}$

$D_f = \mathbb{R} - \{\Delta + 2, \Delta - 2\}$

الف) $\cos x \neq 0$

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

ب) $x \cos x \neq 0$

$x \cos x \neq 0$

$\cos x \neq \frac{1}{x}$

$D_f = \mathbb{R} - \{xk\pi + \frac{\pi}{x}, xk\pi - \frac{\pi}{x}\}$

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الف) $|x+1| - |x+3| \neq 0$

$|x+1| \neq |x+3|$

$(x+1)^2 \neq (x+3)^2$

$x^2 + 2x + 1 \neq x^2 + 6x + 9$

$x^2 - 4x - 8 \neq 0 \rightarrow x^2 - 4x - 8 = 0 \rightarrow \begin{cases} x = -\frac{-4}{2} = 2 \\ x = \frac{-4 \pm \sqrt{16 + 32}}{2} = 6 \end{cases}$

$D_f = \mathbb{R} - \{2, 6\}$

ب) $|x+1| - |x+3| \geq 0$

$|x+1| \geq |x+3|$

$(x+1)^2 \geq (x+3)^2$

$x^2 + 2x + 1 \geq x^2 + 6x + 9$

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

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$\log_{\Delta} \log_{\Delta}^{(x-1)} \geq 0$

$D_f = (1, 3)$

١) $x-1 > 0$

$x > 1$

$\boxed{x > \frac{1}{\Delta}}$

٢) $\log_{\Delta}^{(x-1)} > 0$

$x-1 > 1$

$x > 2$

$\boxed{x > 1}$

٣) $\log_{\Delta}^{(x-1)} \leq 1$

$x-1 \leq \Delta$

$x \leq \Delta + 1$

$\boxed{x \leq 3}$

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الف) $x \cos x + 1 > 0$

$x \cos x > -1$

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

$D_f = (xk\pi + \frac{\pi}{x}, xk\pi + \frac{\pi}{x})$

ب) $\log \frac{x-1}{x+1} \geq 0 \Rightarrow D_f = (-\infty, -1)$

١) $\frac{x-1}{x+1} \geq 1 \rightarrow \frac{-2}{x+1} \geq 0 \rightarrow x+1 \leq 0$

$\boxed{x \leq -1}$

٢) $\frac{x-1}{x+1} \geq 0 \rightarrow \frac{x}{y} + \frac{-1}{y} - \frac{1}{y} + \frac{1}{y}$

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