

$$(a-2)x^2 + ax + b = (a-2)(x-3)^2 \rightarrow ax = (a-2)(-6x) \Rightarrow a = -6a + 12$$

$$a = \frac{12}{7}$$

$$b = (a-2)(9) \Rightarrow b = -\frac{18}{7}$$

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از آنجایی که برد تابع باید نامنفی باشد و $a > 0$ است، محرف از مبدأ باید مقداری مساوی یا بزرگتر از صفر باشد

$$2 - m^2 \geq 0 \Rightarrow -\sqrt{2} \leq m \leq \sqrt{2}$$

$$m_{\min} = -\sqrt{2}$$

$$m_{\max} = \sqrt{2}$$

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$$1) 4 - x^2 \geq 0 \Rightarrow -2 \leq x \leq 2$$

$$2) [x] + [-x] + 1 \neq 0 \rightarrow x \in \mathbb{Z}$$

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

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

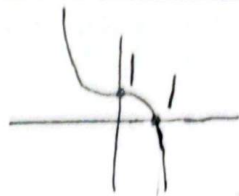
ب) $\frac{(x+1)(x-1)x^2(x-3)}{(x-1)(x^2+x+1)}$ $\frac{-1}{+} \frac{0}{-} \frac{*}{-} \frac{1}{-} \frac{3}{+} \Rightarrow D_f = (-\infty, -1] \cup [3, +\infty) \cup \{0\}$

الف) $|x-2|-3 \geq 0 \rightarrow \begin{cases} x-2 \geq 3 \Rightarrow x \geq 5 \\ x-2 \leq -3 \Rightarrow x \leq -1 \end{cases} D_f = (-\infty, -1] \cup [5, +\infty)$

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ب) $4 - |2-x| \geq 0 \rightarrow |2-x| \leq 4 \Rightarrow -4 \leq 2-x \leq 4 \Rightarrow -2 \leq x \leq 6$

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

الف) $1 - x|x| \geq 0 \Rightarrow f(x) = \begin{cases} x^2 + 1 & x < 0 \\ -x^2 + 1 & x \geq 0 \end{cases}$  $\Rightarrow D_f = (-\infty, 1]$

ب) 1) $3 - |x-5| \geq 0 \rightarrow -3 \leq x-5 \leq 3 \Rightarrow 2 \leq x \leq 8$
 2) $\sqrt{3 - |x-5|} - 1 \neq 0 \Rightarrow x \neq 2, x \neq 8$ $\left. \vphantom{\begin{matrix} 1) \\ 2) \end{matrix}} \right\} D_f = [2, 8] - \{2, 8\}$

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

ب) $2\cos x - 1 \neq 0 \Rightarrow \cos x \neq \frac{1}{2} \Rightarrow D_f = \mathbb{R} - \{2k\pi \pm \frac{\pi}{3}\}$

الف) $|2x+1| - |x+3| \neq 0 \rightarrow |2x+1| \neq |x+3| \Rightarrow \sqrt{x^2+4x+1} \neq \sqrt{x^2+6x+9} \Rightarrow 3x^2 - 2x - 8 \neq 0 \xrightarrow{\text{اذا وضعت}} x^2 - 2x - 2 \neq 0 \rightarrow x \neq \frac{2 \pm \sqrt{4+8}}{2} = 1 \pm \sqrt{3} \Rightarrow D_f = \mathbb{R} - \{1 \pm \sqrt{3}\}$

ب) $|2x+1| - |x+3| \geq 0 \rightarrow |2x+1| \geq |x+3| \Rightarrow \sqrt{x^2+4x+1} \geq \sqrt{x^2+6x+9} \Rightarrow 3x^2 - 2x - 8 \leq 0 \xrightarrow{\div 3} (x-2)(x+\frac{4}{3}) \leq 0 \xrightarrow{-\frac{4}{3} \leq x \leq 2} D_f = (-\infty, -\frac{4}{3}] \cup [2, +\infty)$

1) $2x-1 > 0 \rightarrow x > \frac{1}{2} \rightarrow 1 \wedge 2 \Rightarrow D_f = [1, 3]$

2) $\log_{\frac{1}{2}}^{\log_{\frac{1}{2}} 2x-1} \geq 0 \rightarrow 0 < \log_{\frac{1}{2}} 2x-1 \leq 1 \Rightarrow 1 \leq x \leq 3$

الف) $2\cos x + 1 > 0 \rightarrow \cos x > -\frac{1}{2} \rightarrow D_f = (2k\pi - \frac{2\pi}{3}, 2k\pi + \frac{2\pi}{3})$

ب) 1) $\frac{x-1}{x+1} > 0$
 2) $\log \frac{x-1}{x+1} \geq 0$ $\left. \vphantom{\begin{matrix} 1) \\ 2) \end{matrix}} \right\} \Rightarrow \frac{x-1}{x+1} \geq 1 \rightarrow \frac{-x-1+x-1}{x+1} \geq 0 \Rightarrow \frac{-2}{x+1} \geq 0 \rightarrow \frac{1}{x+1} \leq 0$
 $D_f = (-\infty, -1) \leftarrow \frac{-1}{x+1} > 0$