

$$2(x^2 - 2x) + (y+3)^2 - 9 + K = 0 \Rightarrow 2(x-1)^2 - 2 + (y+3)^2 - 9 + K = 0$$

$$\Rightarrow 2(x-1)^2 + (y+3)^2 + (K-11) = 0 \Rightarrow K \leq 11$$

$$x=a \rightarrow a^2 + 4a = 2a + a + 2 \Rightarrow a^2 + a - 2 = 0 \rightarrow (a-1)(a+2) = 0$$

$$a > 0 \rightarrow a=1 \quad f(1) = a=1 \rightarrow (1)^2 + 4 = 5$$

$$\text{if } |x+1| \geq 2 \sim 2x^2 - b \quad \left\{ \begin{array}{l} |x+1| \geq 2 \\ x+1 \geq 2 \Rightarrow x \geq 1 \\ x+1 \leq -2 \Rightarrow x \leq -3 \end{array} \right.$$

$$x=-3 \rightarrow 2x^2 - b = a + 4x \rightarrow 18 - b = a - 12 \Rightarrow a + b = 30$$

فقط یک عدد جواب داده پس هر دو را یکبار برابر با صفر بوده اند.

$$4x - a = 0 \xrightarrow{x=2} a = 8$$

$$b - 3x = 0 \xrightarrow{x=2} b = 6$$

$$\frac{b}{a} = \frac{1}{2}$$

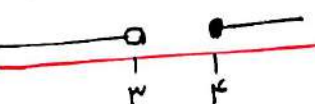
(الف) $\sqrt{\frac{x+1}{|x-3|}}$
 بزرگ صاف
 صاف
 بدون محدودیت همیشه مثبت بجز صفر

$$x+1 \geq 0, x-3 \neq 0 \rightarrow [-1, +\infty) - \{3\}$$

$$\sqrt{\frac{4-x}{x^2+2x+4}} \rightarrow \frac{-2}{+1+1-}$$

$$(ب) [x] - 2 \geq 0 \Rightarrow [x] \geq 2 \Rightarrow x \geq 4$$

$$2 - [x] \geq 0 \Rightarrow [x] \leq 2 \Rightarrow (-\infty, 3)$$



بدون اشتراک

دامنه نهی

الف) $x^2 - x - 6 = (x-3)(x+2) \rightarrow -2, 3$

$x^2 - 13x + 36 \xrightarrow{x=t} t^2 - 13t + 36 \rightarrow (t-4)(t-9) \xrightarrow{t=x^2} (x^2-4)(x^2-9)$

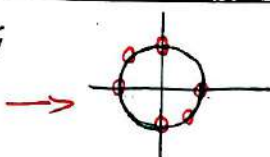
$$\begin{array}{ccccccc} -3 & -2 & 2 & 3 \\ + & - & - & + & + & - & + \\ \hline \end{array} \quad D_f: (-\infty, -3) \cup (2, 3) \cup (3, +\infty)$$

ب)
$$\sqrt{\frac{(x-1)(x+2)(x-3)}{(x+1)(x-2)(x+3)}} \rightarrow \begin{array}{ccccccc} -3 & -2 & -1 & 1 & 2 & 3 \\ + & - & - & - & + & - & + \\ \hline \end{array} \quad (-\infty, -3) \cup [-2, 1] \cup [2, +\infty)$$

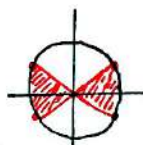
الف) $[-x] - 2 \geq 0 \Rightarrow D_f = (-\infty, -2]$

ب) $[x]^2 - 2[x] - 3 \neq 0 \rightsquigarrow ([x]-3)([x]+1) \begin{cases} [x] \neq -1 \\ [x] \neq 3 \end{cases} \Rightarrow D_f = (-\infty, -1) \cup [0, 3) \cup [4, +\infty)$

الف) $\cot$: تعریف شده
 $\tan$: تعریف شده
 $\tan \neq -1$



$D_f: \mathbb{R} - \left\{ \frac{k\pi}{2}, k\pi - \frac{\pi}{4} \right\}$



ب) $1 - 4\sin^2 x \geq 0 \Rightarrow \sin^2 x \leq \frac{1}{4} \Rightarrow -\frac{1}{2} \leq \sin x \leq \frac{1}{2} \Rightarrow D_f: \left[k\pi - \frac{\pi}{6}, k\pi + \frac{\pi}{6} \right]$

الف) $x-1 > 0 \Rightarrow x > 1$

$D_f: \left[\frac{3}{2}, +\infty \right)$

$\log_{\frac{1}{2}} \frac{x-1}{2} < 1 \Rightarrow x-1 \geq \frac{1}{2} \Rightarrow x \geq \frac{3}{2}$

$\frac{x-1}{2} > 0 \Rightarrow x > 1$

ب) $x^2 - x \geq 0 \rightarrow x(x-1) \geq 0 \rightarrow \begin{array}{ccc} 0 & 1 \\ + & - & + \\ \hline \end{array}$

$\log_{\frac{1}{2}} \frac{x^2-3x}{4} \neq 1 \Rightarrow \frac{x^2-3x}{4} \neq \frac{1}{2} \Rightarrow x^2-3x \neq 2 \Rightarrow x^2-3x-2 \neq 0$

$x^2 - 3x > 0 \rightarrow x(x-3) > 0 \rightarrow \begin{array}{ccc} 0 & 3 \\ + & - & + \\ \hline \end{array} \quad D_f: (-\infty, 0) \cup (3, +\infty) - \{-1, 4\}$

الف) $\frac{4x-x^2}{2} - 1 \geq 0 \Rightarrow \frac{4x-x^2}{2} \geq 1 \Rightarrow 4x-x^2 \geq 2 \Rightarrow -x^2+4x-2 \geq 0$

$\rightarrow -(x-1)(x-3) \geq 0 \rightarrow \begin{array}{ccc} 1 & 3 \\ - & + & - \\ \hline \end{array} \quad D_f: [1, 3]$

ب) $\frac{3x+5}{2x+4} \in \mathbb{W} \rightsquigarrow \frac{4w-5}{2w-3} = \frac{5-4w}{2w-3}$