

$$2x^2 - 4x + y^2 + 4y + K = 0$$

$$2(x^2 - 2x + 1) + y^2 + 4y + 9 = 0$$

برای مربع شدن برای مربع شدن

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$$K = 2(1) + 9 = 11$$



$$a^2 + 4a = 2a + a + 2 \rightarrow a^2 + a - 2 = 0 \rightarrow (a-1)(a+2) = 0 \Rightarrow a = 1 \text{ or } -2$$

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$$f(1) = (1)^2 + 2(1) = 5$$



$$f(x) = \begin{cases} x^2 - b & x \geq 1 \\ a + 2x & -1 \leq x < 1 \\ x^2 - b & x < -1 \end{cases}$$

$$\text{if } x = -3 \rightarrow 11 - b = a - 4 \rightarrow a + b = 15$$

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حاصل نویسی

$$\sqrt{12-a} + \sqrt{b-4} = y$$

$$a \leq 12 \quad b \geq 4$$

$$a = 12 \quad b = 4$$

$$\frac{b}{a} = \frac{4}{12} = \frac{1}{3}$$

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$$\text{الف) } \sqrt{\frac{x+1}{|x-3|}} \quad x \rightarrow -1 \text{ or } 3$$

$$\frac{x}{p} \mid \frac{-1}{-0} + \frac{3}{0} \quad [-1, +\infty) - \{3\}$$

$$\sqrt{\frac{4-x}{(x+2)^2}} \quad x \rightarrow 4 \text{ or } -2$$

$$\frac{x}{p} \mid \frac{-2}{0} + \frac{4}{0} \quad (-\infty, 4] - \{-2\}$$

$$[-1, 4] - \{3\}$$

$$\text{ب) } \textcircled{I} [x] \geq 3 \rightarrow x \geq 3$$

$$\textcircled{II} [x] < 3 \rightarrow x < 3$$

$$\emptyset$$

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الف) $\frac{(x-3)(x+2)}{(x^2-4)(x^2-9)} > 0$

$$\begin{array}{c|cccccc} x & -3 & -2 & 2 & 3 \\ \hline P & + & - & - & + & + \end{array}$$

$(-\infty, -3) \cup (2, +\infty) - \{3\}$

ب) $\frac{(x-1)(x-3)(x+2)}{(x+1)(x-2)(x+3)} > 0$

$$\begin{array}{c|cccccc} x & -3 & -2 & -1 & 1 & 2 & 3 \\ \hline P & + & - & + & - & + & + \end{array}$$

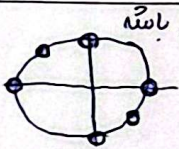
$(-\infty, -3) \cup [-2, -1) \cup (1, 2) \cup [3, +\infty)$

الف) $[-x] > 2 \Rightarrow -x > 2 \Rightarrow x < -2$

ب) $\frac{\omega x^2 + 4}{([x]-3)([x]+1)}$
 نیمی قسری
 $[x] \neq 3 \rightarrow 3 < x < 4 \rightarrow [3, 4)$
 $[x] \neq -1 \rightarrow -1 < x < 0 \rightarrow [-1, 0)$

$\mathbb{R} - \{[-3, 4) \cup [-1, 0)\}$

الف)



اینجا نباید باشد

تعریف $\cot x \neq 0$
 تعریف $\tan x \neq \pm \infty$
 $\tan x \neq -1$

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

ب) $\sqrt{2} \sin^2 x \leq 1 \Rightarrow \sin^2 x \leq \frac{1}{2} \Rightarrow -\frac{1}{\sqrt{2}} \leq \sin x \leq \frac{1}{\sqrt{2}} \Rightarrow k\pi - \frac{\pi}{4} \leq x \leq k\pi + \frac{\pi}{4}$

$[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4}]$

الف) $x-1 > 0 \Rightarrow x > 1$

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

$(1, \frac{3}{2}]$

ب) I) $x(x-1) > 0 \Rightarrow x < 0 \text{ or } x > 1$

II) $x^2-3x > 0 \Rightarrow x(x-3) > 0 \Rightarrow x < 0 \text{ or } x > 3$

III) $\log_{\frac{1}{2}} x^2-3x < 1 \Rightarrow x^2-3x < 2 \Rightarrow (x-4)(x+1) < 0 \Rightarrow -1 < x < 4$

الف) $x-x^2 > 3 \Rightarrow x^2-x+3 < 0 \Rightarrow (x-1)(x-3) < 0$

$$\begin{array}{c|ccc} x & 1 & 3 \\ \hline P & + & - & + \end{array}$$

$(-\infty, 1] \cup [3, +\infty)$

ب) $\frac{3x+5}{2x+4} \in \mathbb{W} \Rightarrow 3x+5 = 2xW + 4W \Rightarrow x(3-2W) = 4W+5$

$x = \frac{4W+5}{3-2W}$