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19, 5 آفرین

ازین بدرستی

۱-

$$y = x^2 - a \rightarrow x^2 = y + a \rightarrow x = \sqrt{y + a}$$

(الف)

$$\rightarrow y + a \geq 0 \rightarrow y \geq -a \rightarrow D_f = [-a, +\infty)$$

(۲)

$$y = x^3 + 1 \rightarrow x^3 = y - 1 \rightarrow x = \sqrt[3]{y - 1} \rightarrow D_f = \mathbb{R}$$

(ب)

۲-

$$y = \frac{x^2 - \varepsilon x + \frac{\varepsilon^2}{4} + r}{a^2 - rab} \rightarrow x^2 - \varepsilon x + \frac{\varepsilon^2}{4} + r = (x - \frac{\varepsilon}{2})^2 + r$$

(الف)

$$\rightarrow y - r = (x - \frac{\varepsilon}{2})^2 \rightarrow x - \frac{\varepsilon}{2} = \sqrt{y - r}$$

$$\rightarrow x = \sqrt{y - r} + \frac{\varepsilon}{2} \rightarrow y - r \geq 0 \rightarrow y \geq r \rightarrow D_f = [r, +\infty)$$

(۲)

$$x^2 - \varepsilon x + 1 = (x - \frac{\varepsilon}{2})^2 - \frac{\varepsilon^2}{4} + 1 = (x - \frac{\varepsilon}{2})^2 - \frac{\varepsilon^2 - 4}{4}$$

(ب)

$$\sqrt{y + \frac{\varepsilon^2 - 4}{4}} = \sqrt{(x - \frac{\varepsilon}{2})^2} \rightarrow x - \frac{\varepsilon}{2} = \sqrt{y + \frac{\varepsilon^2 - 4}{4}} \rightarrow x = \sqrt{y + \frac{\varepsilon^2 - 4}{4}} + \frac{\varepsilon}{2}$$

$$\rightarrow y + \frac{\varepsilon^2 - 4}{4} \geq 0 \rightarrow y \geq -\frac{\varepsilon^2 - 4}{4} \rightarrow [-\frac{\varepsilon^2 - 4}{4}, +\infty)$$

۳-

$$y = \frac{x^2 + r}{x^2 - r} \rightarrow yx^2 - ry = x^2 + r \rightarrow yx^2 - x^2 = ry + r \rightarrow x^2(y - 1) = r(y + 1)$$

(الف)

$$\rightarrow x^2 = \frac{r(y + 1)}{y - 1} \rightarrow x = \sqrt{\frac{r(y + 1)}{y - 1}}$$

$$\rightarrow \frac{r(y + 1)}{y - 1} \geq 0 \rightarrow \frac{+}{+} \rightarrow (-\infty, -1, 0] \cup (1, +\infty) = D_f$$

$$\rightarrow y - 1 \neq 0$$

$$y = \frac{r|x| + 1}{|x| - \varepsilon} = y|x| - \varepsilon y = r|x| + 1 \rightarrow |x|(y - r) = \varepsilon y + 1$$

(ب)

$$\rightarrow |x| = \frac{\varepsilon y + 1}{y - r} \rightarrow \frac{\varepsilon y + 1}{y - r} \geq 0 \rightarrow \frac{+}{+} \rightarrow (-\infty, -\frac{1}{\varepsilon}] \cup (r, +\infty)$$

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$$y = \frac{1}{x^2 - \varepsilon x + 1} \rightarrow yx^2 - \varepsilon xy = 1 \rightarrow yx^2 - \varepsilon xy - 1 = 0$$

(الف)

$$\Delta = b^2 - 4ac \rightarrow (-\varepsilon y)^2 - 4(y)(-1) = \sqrt{14y^2 + \varepsilon y} \leq$$

$$\rightarrow 14y^2 + \varepsilon y \geq 0$$

به شرطی که $y \neq 0$ زیرا، $y=0$ را قبول نمی‌کنیم

$$\varepsilon y (\varepsilon y + 1) \geq 0 \quad \begin{array}{c} -\frac{1}{\varepsilon} \quad 0 \\ + \quad - \quad + \end{array} \rightarrow D_f = (-\infty, -\frac{1}{\varepsilon}] \cup (0, +\infty)$$

نمی‌تواند باشد زیرا به ازای y منفی خارج کسره y منفی می‌شود

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$$x^2 - 4x + 2 \rightarrow a > 0 \rightarrow \min \begin{cases} \frac{-b}{2a} = \frac{4}{2} = 2 \geq 2 \\ y = -\frac{b}{2a} + \frac{c}{a} = -2 + 2 = 0 \end{cases}$$

(الف)

$$\rightarrow D_f = [-2, +\infty)$$

$$y = -x^2 + \varepsilon x + 2 \rightarrow a < 0 \rightarrow \max \begin{cases} \frac{-b}{2a} = \frac{\varepsilon}{-2} \geq 2 \\ -\frac{\varepsilon}{2} + \frac{\varepsilon^2}{4} + 2 = 4 \end{cases}$$

(ب)

$$\rightarrow D_f = [-\infty, 4]$$

$$y = \sqrt{x^2 - 4x + 2} \rightarrow a > 0 \rightarrow \min \begin{cases} \frac{-b}{2a} = \frac{4}{2} = 2 \\ -y = -2 \end{cases}$$

(الف)

$$\rightarrow \{2, +\infty\} \rightarrow D_f = [2, +\infty)$$

(ب)

$$y = \sqrt{-x^2 + \varepsilon x + 1} \rightarrow a < 0 \rightarrow \max \begin{cases} \frac{-b}{2a} = \frac{\varepsilon}{-2} = 2 \\ y = -\frac{b}{2a} + \frac{c}{a} = 2 + 1 = 3 \end{cases}$$

(ب)

$$\sqrt{[-\infty, 14]} \rightarrow D_f = [0, 3]$$

-٦

(الف) $\mathbb{R}$

$$\sqrt{\mathbb{R}} \Rightarrow \mathbb{R} \geq 0 \rightarrow [0, +\infty)$$

(ب)

$$(الف) D_f = \mathbb{R} - \{3\}$$

(ب)

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$$D_f = \sqrt{\mathbb{R} - \{3\}} \rightarrow [0, +\infty) - \{\sqrt{3}\} \rightarrow [0, +\infty) - \{2\}$$

(ب)

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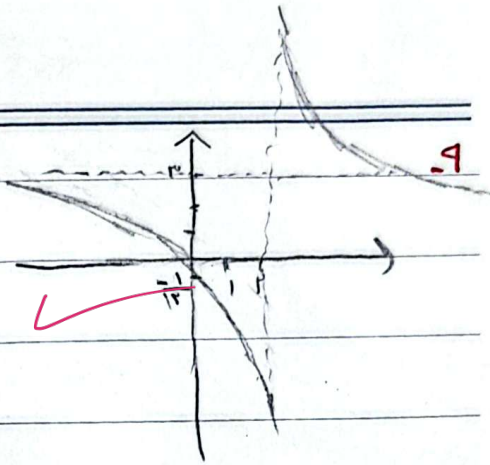
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الف) $x=2 \rightarrow$ ریشه ها مندرج : بجانب قائم

$\rightarrow$ بجانب افقی $\rightarrow \frac{a}{c} \rightarrow y=3$

$\rightarrow x \neq 0 \rightarrow y = -\frac{1}{x}$



ب) $x = \frac{1}{p} \rightarrow$ ریشه مندرج : بجانب قائم

$\rightarrow$ بجانب افقی $\rightarrow \frac{a}{c} = -2 \rightarrow y = -2$

$$y = \frac{2(2n-1)}{1-2n} = -2 \rightarrow y = -2 \text{ (نتیجه)}$$

$$y = \frac{2n-2}{-2n+1} \rightarrow -2ny + y = 2n-2$$

$$\rightarrow -2ny - 2n = y - 2 \rightarrow x(-2y-2) = y-2 \rightarrow x = \frac{y-2}{-2y-2} = \frac{(y-2)}{-2(y+1)}$$

$$\rightarrow -2(y+1) \neq 0 \rightarrow -2y-2 \neq 0 \rightarrow y \neq -1 \rightarrow y \neq -2$$

صوابت باشد

$$D_f = \mathbb{R} \setminus \{-2\}$$

الف) $\cos^2 x \rightarrow [2, +\infty)$

ب) $\sqrt[3]{x} \rightarrow x + \frac{1}{x} \rightarrow (-\infty, -2] \cup [2, +\infty)$

رادیکال فرجه 3 روی بردار اعمال می شود

$$R_y = (-\infty, -\sqrt[3]{2}] \cup [\sqrt[3]{2}, +\infty)$$