

الف) $y-1=(x-1)^2 \Rightarrow \sqrt{y-1}=x-1 \Rightarrow x=\sqrt{y-1}+1 \Rightarrow R=\mathbb{R}$

ب) $yx^2-2xy-1=0 \Rightarrow \Delta = 4y^2+4y \Rightarrow x = \frac{2y \pm \sqrt{4y^2+4y}}{2y} \Rightarrow \Delta \geq 0 \Rightarrow 4y^2+4y \geq 0$

$\rightarrow \begin{array}{c} -1 \\ + \quad - \quad + \end{array} \rightarrow (-\infty, -1] \cup (0, +\infty) = R$

الف) $y=x^2-fx+1 \Rightarrow x_{min} = -\frac{b}{2a} = \frac{f}{2} \Rightarrow y_{min} = 1 \Rightarrow R = [1, +\infty)$

ب) $x_{max} = -\frac{b}{2a} = \frac{f}{2} \Rightarrow y_{max} = 1 \Rightarrow R = (-\infty, 1]$

ج) $x_{min} = -\frac{b}{2a} = \frac{f}{2} \Rightarrow y_{min} = -1 \Rightarrow R = \sqrt{[-1, +\infty)} = [0, +\infty)$

د) $x_{max} = -\frac{b}{2a} = \frac{f}{2} \Rightarrow y_{max} = 9 \Rightarrow R = \sqrt{(-\infty, 9]} = [0, 3]$

الف) $R = \mathbb{R}$

ب) $R = \mathbb{R}$

ج) $R = \sqrt{\mathbb{R}} = [0, +\infty)$

د) $R = [0, +\infty)$

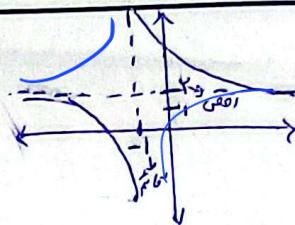
الف) $R = \mathbb{R} - \left\{\frac{a}{c}\right\} = \mathbb{R} - \{1\}$

ب) $R = \mathbb{R} - \left\{\frac{a}{c}\right\} = \mathbb{R} - \{1\}$

الف) $R = \sqrt{\mathbb{R} - \left\{\frac{a}{c}\right\}} = \sqrt{\mathbb{R} - \{1\}} = [0, +\infty) - \{\sqrt{1}\}$

ب) $R = \sqrt{\mathbb{R} - \left\{\frac{a}{c}\right\}} = \sqrt{\mathbb{R} - \{-1\}} = [0, +\infty)$

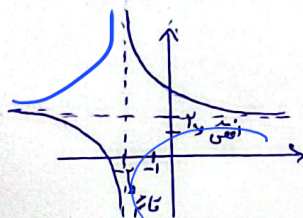
$$\begin{cases} \left(\frac{a}{c}\right) = 2 \\ \left(\frac{b}{c}\right) = -1 \end{cases}$$



(الف)

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$$\begin{cases} \left(\frac{a}{c}\right) = 2 \\ \left(\frac{b}{c}\right) = -2 \end{cases}$$



(ب)

$$R = (-\infty, -2] \cup [2, +\infty)$$

(الف)

(ب)

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$$\frac{x^4}{x^3} + \frac{1}{x^2} \rightarrow x + \frac{1}{x^2} \rightarrow R = (-\infty, -2] \cup [2, +\infty)$$

(ج)

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$$\frac{\sqrt{x^2+1}}{\sqrt{x}} = \frac{\sqrt{x}}{\sqrt{x}} + \frac{1}{\sqrt{x}} \Rightarrow \sqrt{x} + \frac{1}{\sqrt{x}} \rightarrow R = (-\infty, -2] \cup [2, +\infty)$$

(د)

$$R = [2, +\infty)$$

من عبارت نامعنى مىگيريم :

$$x^2 + y(x^2 + y) = x^2(x^2 + y) + 1 \rightarrow x^4 + x^2(y) + 1 - y = 0 \rightarrow x^4 + b + \frac{c-y}{b} + \frac{1-y}{c} = 0$$

(هـ)

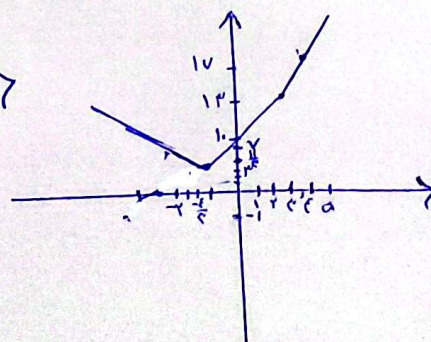
$$\rightarrow \Delta \geq 0 \rightarrow 9 + y^2 - 4y + 12y - 4 \geq 0 \rightarrow (y+1)(y+5) \geq 0 \rightarrow \left| \frac{-5-1}{2} \right| R = (-\infty, -5] \cup [-1, +\infty)$$

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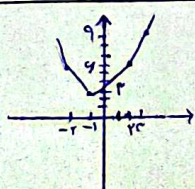
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$$\frac{x^2 + t + 1}{\sqrt{x^2 + t}} \rightarrow \sqrt{x^2 + t} + \frac{1}{\sqrt{x^2 + t}} \rightarrow \text{من قوتى مىگيريم} \rightarrow \text{مقدار} = x = 0 \rightarrow 1 + \frac{1}{1} = \frac{2}{1} \rightarrow R = \left[\frac{2}{1}, +\infty \right)$$

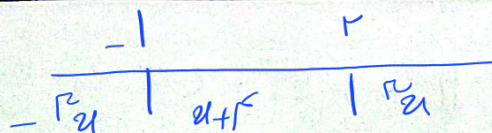
$$\begin{cases} x > 3 \\ 2x + 7 < x < 3 \\ x < -\frac{4}{3} \end{cases} \Rightarrow$$



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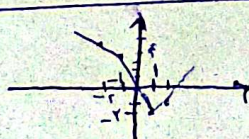


$$R = [3, +\infty)$$

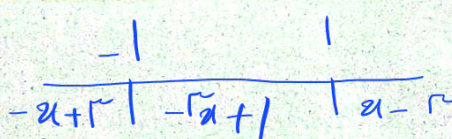


(الف)

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$$R = [-2, +\infty)$$



(ب)

$$x^r + r + \frac{1}{x^r + r} - r \xrightarrow{x^r \rightarrow -} \frac{1}{r} \quad R = \left[\frac{1}{r}, +\infty \right)$$

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