

الف) $y + \omega = m^2$

$\pm \sqrt{y + \omega} = m \quad R = [-\omega, +\infty)$

①

ب) $y - 1 = m^2 \rightarrow \sqrt{y - 1} = m \quad R = \mathbb{R}$

الف) $m^2 - 4m + 4 + 2 = y \rightarrow (m - 2)^2 + 2 = y$

$R = [2, +\infty)$

$m - 2 = \pm \sqrt{y - 2}$
 $m = \pm \sqrt{y - 2} + 2$

②

ب) $m^2 - \omega m + (1 - y) = 0$

$m = \frac{-b \pm \sqrt{\Delta}}{2a}$

$R = \left[-\frac{\omega}{2}, +\infty\right)$

$\Delta \geq 0 \rightarrow \omega^2 - 4(1 - y) \geq 0$

$\omega^2 - 4 + 4y \geq 0$
 $y \geq \frac{\omega^2 - 4}{4}$

الف) $m^2 + 3 = ym^2 - 2y \rightarrow m^2 - ym^2 = -2 - 2y$

$m^2(1 - y) = -2 - 2y$

$m^2 = \frac{-2 - 2y}{1 - y}$

$R = (1, +\infty) \cup (-\infty, -1.8]$

$m = \pm \sqrt{\frac{-2 - 2y}{1 - y}}$

③

ب) $2|m| + 1 = y|m| - 4y \rightarrow 2|m| - y|m| = -1 - 4y$

$|m|(2 - y) = -1 - 4y$

$|m| = \frac{-1 - 4y}{2 - y}$

$R = (-\infty, -1.8] \cup (1, +\infty)$

$$\frac{y^2}{a} - \frac{xy}{b} - \frac{1}{c} \geq 0$$

$$\frac{-\frac{1}{c}}{\frac{1}{a} - \frac{1}{b}}$$

$$R_f = (0, +\infty) \cup (-\infty, -1/25]$$

$$\Delta \geq 0$$

$$b^2 - 4ac \geq 0$$

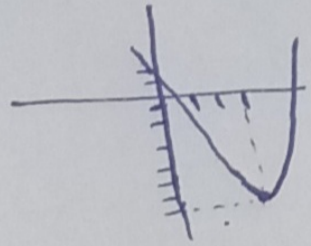
$$14y^2 + 4y \geq 0$$

$$4y \left(4y + 1 \right) \geq 0$$

⑦

$$\text{الف) } \min \left| \begin{array}{l} \frac{-b}{2a} = \frac{4}{2} = 2 \\ \frac{-\Delta}{4a} = \frac{-16+1}{4} = \frac{-15}{4} = -3.75 \end{array} \right.$$

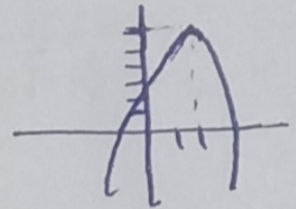
$$R = [-3.75, +\infty)$$



③

$$\text{ب) } \max \left| \begin{array}{l} \frac{-b}{2a} = \frac{-4}{-2} = 2 \\ \frac{-\Delta}{4a} = \frac{-16-1}{-4} = \frac{-17}{-4} = 4.25 \end{array} \right.$$

$$R = (-\infty, 4.25]$$



$$\text{الف) } \min \left| \begin{array}{l} \frac{-b}{2a} = \frac{4}{2} = 2 \\ \frac{-\Delta}{4a} = \frac{-16+1}{4} = \frac{-15}{4} = -3.75 \end{array} \right.$$

$$R = [0, +\infty)$$

④

$$\text{ب) } \max \left| \begin{array}{l} \frac{-b}{2a} = \frac{-4}{-2} = 2 \\ \frac{-\Delta}{4a} = \frac{-16-1}{-4} = \frac{-17}{-4} = 4.25 \end{array} \right.$$

$$R = [0, 4.25]$$

$$\text{الف) } R = \mathbb{R}$$

⑤

$$\text{ب) } \sqrt{\mathbb{R}} \leadsto R = [0, +\infty)$$

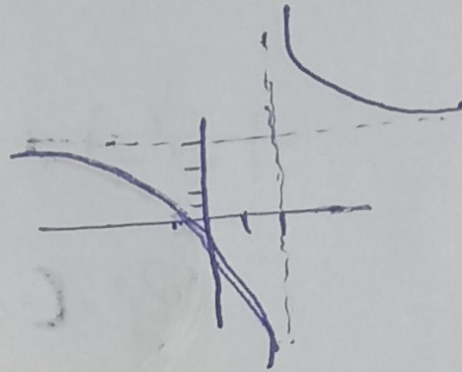
الف) $D = \mathbb{R} - \{3\}$

٨

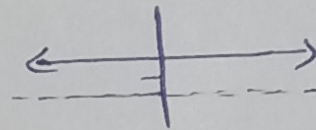
ب) $D = \sqrt{\mathbb{R} - \{4\}} \rightarrow D = [0, +\infty) - \{4\}$

الف) $D = \mathbb{R} - \{3\}$

٩



ب) $\frac{x^2-2}{-x^2+1} = -2$



الف) $D = [2, +\infty)$

١٠

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