

مختار

19, 5 آفرین

نصف سازه 9

مختار

الف) $y = x^2 - a \rightarrow x^2 = y + a \rightarrow x = \pm \sqrt{y+a} \rightarrow y+a \geq 0 \Rightarrow y \geq -a$ -1

$R_f = [-a, +\infty)$ 2

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

الف) $y = x^2 - kx + 4 \rightarrow y-4 = (x-k/2)^2 \rightarrow x-k/2 = \pm \sqrt{y-4} \rightarrow x = \pm \sqrt{y-4} + k/2$ -2

$y-4 \geq 0 \rightarrow y \geq 4 \rightarrow R_f = [4, +\infty)$ 2

ب) $y = (x^2 - ax + \frac{a^2}{k}) - \frac{a^2}{k} + 1 \Rightarrow (x - \frac{a}{k})^2 - \frac{a^2}{k} + 1 = y \Rightarrow x - \frac{a}{k} = \pm \sqrt{y + \frac{a^2}{k} - 1}$

$x = \pm \sqrt{y + \frac{a^2}{k} - 1} + \frac{a}{k} \Rightarrow y + \frac{a^2}{k} - 1 \geq 0 \Rightarrow y \geq 1 - \frac{a^2}{k} \rightarrow R_f = [1 - \frac{a^2}{k}, +\infty)$

الف) $ym^2 - 2y = m^2 + 1 \rightarrow ym^2 - m^2 = 2y + 1$ -3

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

ب) $y|m| - 2|m| = ky + 1$

$|m|(y-2) = ky+1 \rightarrow |m| = \frac{ky+1}{y-2} \rightarrow R_f = (-\infty, -\frac{1}{k}] \cup (1, +\infty)$

$\frac{1}{x^2 - km} = y \rightarrow ym^2 - kmy - 1 = 0 \rightarrow \Delta = b^2 - 4ac \geq 0$ -4

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

$ky(ky+1) \geq 0 \rightarrow R_f = (-\infty, -\frac{1}{k}] \cup [0, +\infty) \rightarrow \mathbb{R} - (-\frac{1}{k}, 0)$

ازاد

الف) $a > 0 \rightarrow \min \begin{cases} x = \frac{-b}{2a} = \frac{4}{2} = 2 \\ y = 9 - 1 \cdot 1 + 2 = -7 \end{cases} \Rightarrow R_f = [-7, +\infty)$ -5

ب) $a < 0 \rightarrow \max \begin{cases} x = \frac{-b}{2a} = \frac{-k}{-2} = \frac{k}{2} \\ y = -k + 1 + 2 = 4 \end{cases} \Rightarrow R_f = (-\infty, 4]$

الف) $a > 0 \rightarrow \min \begin{cases} x = \frac{-b}{2a} = \frac{4}{2} = 2 \\ y = 9 - 1 \cdot 1 + 2 = -7 \end{cases} \rightarrow \sqrt{[-7, +\infty)} \Rightarrow R_f = [0, +\infty)$ -6

ب) $a < 0 \rightarrow \max \begin{cases} x = \frac{-b}{2a} = \frac{-k}{-2} = \frac{k}{2} \\ y = -k + 1 + 1 = 1 \end{cases} \rightarrow \sqrt{(-\infty, 1]} \Rightarrow R_f = [0, \sqrt{k}]$ 2

الف) $\Rightarrow R_f = \mathbb{R}$ ✓

-7

ب) $\Rightarrow \sqrt{(-\infty, +\infty)} = [0, +\infty) = R_f$ ✓

2

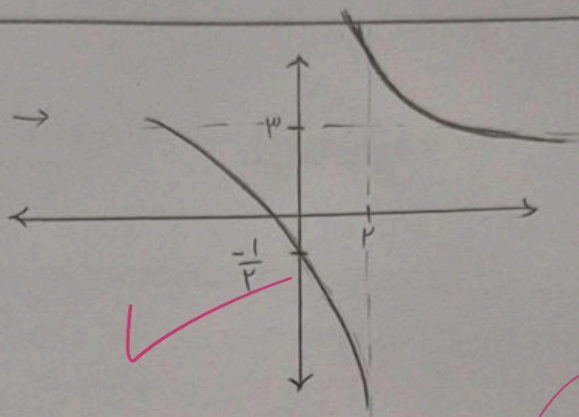
الف) $\rightarrow \mathbb{R} - \left\{ \frac{a}{c} \right\} = R_f \Rightarrow R_f = \mathbb{R} - \{3\} \rightsquigarrow ad \neq cb, c \neq 0$

-8

ب) $R_f = \sqrt{\mathbb{R} - \left\{ \frac{a}{c} \right\}} = \sqrt{\mathbb{R} - \{4\}} = [0, +\infty) - \{2\} = R_f$ ✓

2

الف) $\rightarrow$ معادله افقی $= \frac{a}{c} = y \rightarrow 3$
 معادله عمودی $= m = \frac{1}{3}$ ✓

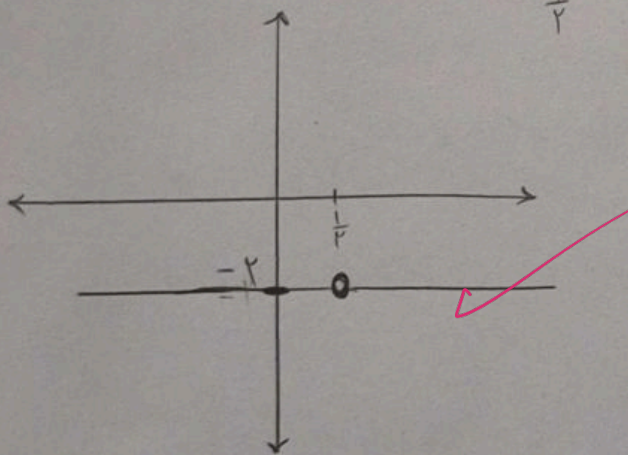


-4

2

ب) $\rightarrow$ معادله افقی $= \frac{a}{c} = y = -2$
 معادله عمودی $= m = \frac{1}{2}$ ✓

$\frac{km - 2}{-2m + 1} \Rightarrow ad = cb$
 $|x| = -x - 2$
 $x = 1 \rightarrow x$
 $R_f = \{ -2 \}$ ✓



الف) $\xrightarrow{a > 0} R_f = [p, +\infty)$ ✓

1, 0

ادسیال نمبر 3 اصحاب مرئوس $\leftarrow R_f = (-\infty, -\sqrt{2}] \cup [\sqrt{2}, +\infty)$

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