

امین خالوی "ههم الف"

سوال ۱

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$x^2 = y + 5 \Rightarrow x = \pm \sqrt{y+5} \Rightarrow y \geq -5 \rightarrow R_f = [-5, \infty)$
 $x^3 = y - 1 \Rightarrow x = \sqrt[3]{y-1} \Rightarrow R_f = \mathbb{R}$

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الف) $y = x^2 - 4x + 4$

ب-۱۵۰

$x^2 - 4x + 4 - y = 0 \Rightarrow 14 - 2x^2 + 4y \geq 0 \Rightarrow y \geq x^2 - 2 \rightarrow R_f = [2, \infty)$

ب) $y = x^2 - 8x + 1$

$0 = x^2 - 8x + 1 - y \Rightarrow 14 - 2x^2 + 4y \geq 0 \Rightarrow y \geq x^2 - 4 \rightarrow R_f = [-4, \infty)$

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سوال ۲

الف) $y = x^2 - 2y = x^2 + 3$

$0 = x^2(1-y) + 2y + 3 \Rightarrow x^2 = \frac{2y+3}{y-1} \Rightarrow x = \pm \sqrt{\frac{2y+3}{y-1}} \Rightarrow R_f = (-\infty, -\frac{3}{2}] \cup [1, \infty)$

ب) $y = |x| - 4y = 2|x| + 1$

$|x|(y-2) = 4y + 1 \rightarrow |x| = \frac{4y+1}{y-2} \Rightarrow R_f = (-\infty, \frac{1}{2}] \cup [2, \infty)$

$y = x^2 - 4xy = 1 \rightarrow y = x^2 - 4xy - 1 = 0$

$14y^2 - 4(y-1) \rightarrow 14y^2 + 4y \geq 0 \rightarrow y(4y+1) \geq 0 \rightarrow R_f = [-\infty, -\frac{1}{4}] \cup [0, \infty)$

الف) $x^2 - 4x + 2 \rightarrow \text{MOX}$

$-\frac{b}{2a} \rightarrow \frac{2}{2} \rightarrow 1 / 9 - 18 + 2 \rightarrow -7 \rightarrow [-7, \infty) = R_f$

ب) $x^2 + 4x + 2 \rightarrow \text{Min}$

$\frac{-b}{2a} \rightarrow \frac{-4}{2} \rightarrow -2 / -4 + 18 + 2 \rightarrow 14 \rightarrow (-\infty, 14] = R_f$

الف) $x^2 - 4x + 2 \rightarrow \text{MOX}$

$\frac{4}{2} \rightarrow 2 / 9 - 18 + 2 \rightarrow -7 \rightarrow [-7, \infty) \xrightarrow{\text{زیر راسال}} [0, \infty) = R_f$

ب) $x^2 + 4x + 1 \rightarrow \text{Min}$

$\frac{-4}{2} \rightarrow -2 / -4 + 18 + 1 \rightarrow 14 \rightarrow (-\infty, 14] \xrightarrow{\text{زیر راسال}} [0, 14] = R_f$

الف) $x^4 + 4x^2 + 4x + 1 \Rightarrow R_f = \mathbb{R}$

ب) $\sqrt{x^4 + 4x^2 + 4x + 1} \Rightarrow R_f = [0, \infty)$

سوال ۳

$y = x^2 - 4xy = 1 \rightarrow y = x^2 - 4xy - 1 = 0$

$14y^2 - 4(y-1) \rightarrow 14y^2 + 4y \geq 0 \rightarrow y(4y+1) \geq 0 \rightarrow R_f = [-\infty, -\frac{1}{4}] \cup [0, \infty)$

سوال ۵

الف) $x^2 - 4x + 2 \rightarrow \text{MOX}$

$\frac{4}{2} \rightarrow 2 / 9 - 18 + 2 \rightarrow -7 \rightarrow [-7, \infty) \xrightarrow{\text{زیر راسال}} [0, \infty) = R_f$

ب) $x^2 + 4x + 1 \rightarrow \text{Min}$

$\frac{-4}{2} \rightarrow -2 / -4 + 18 + 1 \rightarrow 14 \rightarrow (-\infty, 14] \xrightarrow{\text{زیر راسال}} [0, 14] = R_f$

الف) $x^4 + 4x^2 + 4x + 1 \Rightarrow R_f = \mathbb{R}$

ب) $\sqrt{x^4 + 4x^2 + 4x + 1} \Rightarrow R_f = [0, \infty)$

سوال ۷

سوال 8

1, 1, 5

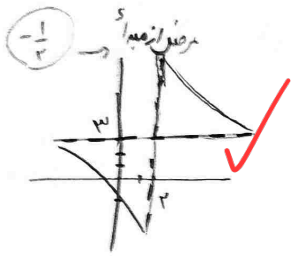
ا) $ad \neq bc, c \neq 0 \Rightarrow R_f = \mathbb{R} - \left\{ \frac{3}{2} \right\}$ ✓

ب) $ad \neq bc, c \neq 0 \Rightarrow R_f = \mathbb{R} - \left\{ \frac{3}{2} \right\}$
 $R_f = \mathbb{R} - \left\{ \frac{3}{2} \right\} \xrightarrow{\text{ارتباط}} R_f = [0, +\infty) - \left\{ \frac{3}{2} \right\}$

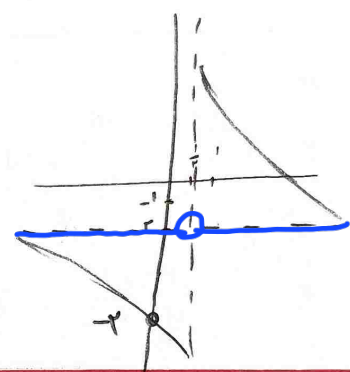
سوال 9

1

$y = \frac{3n+1}{x-2} \Rightarrow \begin{cases} \text{میان افقی} \Rightarrow \frac{a}{c} \Rightarrow 3 = y \\ \text{میان عمودی} \Rightarrow \frac{d}{c} \Rightarrow 2 = x \end{cases}$



$y = \frac{3n-2}{-2n+1} \Rightarrow \begin{cases} \text{میان عمودی} \rightarrow \frac{1}{2} \\ \text{میان افقی} \rightarrow \frac{a}{c} = -2 \end{cases}$
 $y = -2$
 $x \neq \frac{1}{2}$



سوال 10

1, 1, 5

$y = \cos^2 n + \frac{1}{\cos^2 n} \Rightarrow R_f = [2, \infty_+)$ ✓

حوازه مثبت و یا صفر
 $y = \sqrt{n + \frac{1}{n}} \Rightarrow \sqrt{(-\infty, -2] \cup [2, \infty_+)} = R_f$

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

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