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پنجشنبه دهم دختر

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سا عباسی

۱- ۳

الف) $y = x^2 - 5 \to x^2 = y + 5 \to x = \pm\sqrt{y+5} \to R_f = [-5, +\infty)$

ب) $y = x^3 + 1 \to x^3 = y - 1 \to x = \sqrt[3]{y-1} \to R_f = \mathbb{R}$

۲- ۲

الف) $y = x^2 - 4x + 6 \to y = (x-2)^2 + 2 \to x - 2 = \pm\sqrt{y-2} \to x = \pm\sqrt{y-2} + 2 \to y \geqslant 2$

$R_f = [2, +\infty)$

ب) $y = (x - \frac{5}{2})^2 - \frac{21}{4} \to y = \pm\sqrt{y + \frac{21}{4}} + \frac{5}{2} \to y \geqslant -\frac{21}{4} \to R_f = [-\frac{21}{4}, +\infty)$

۳- ۲

الف) $yx^2 - 2y = x^2 + 3 \to yx^2 - x^2 = 2y + 3 \to x^2(y-1) = 2y + 3 \to x = \pm\sqrt{\frac{2y+3}{y-1}}$

$\frac{2y+3}{y-1} \geqslant 0$ $\quad -\frac{3}{2} \quad 1 \quad + \; - \; +$ $\quad R_f = (-\infty, -\frac{3}{2}] \cup (1, +\infty)$

ب) $y|x| - 4y = 2|x| + 1 \to y|x| - 2|x| = 4y + 1 \to |x| = \frac{4y+1}{y-2}$ $\quad -\frac{1}{4} \quad 2 \quad + \; - \; +$

$R_f = (-\infty, -\frac{1}{4}] \cup (2, +\infty)$

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$yx^2 - 4xy = 1 \to x = \frac{4y \pm \sqrt{16y^2 + 4y}}{2y}$

$16y^2 + 4y \geqslant 0 \to 4y(4y+1) \geqslant 0$ $\quad -\frac{1}{4} \quad 0 \quad + \; - \; +$ $\quad R_f = (-\infty, -\frac{1}{4}] \cup (0, +\infty)$

$2y \neq 0 \to y \neq 0$

۵- ۵

الف) $\frac{-b}{2a} = \frac{6}{2} = 3$ ، $9 - 18 + 2 = -7$ $\quad R_f = [-7, +\infty)$

ب) $\frac{-b}{2a} = \frac{-4}{-2} = 2$ ، $+8 - 4 + 2 = 6$ $\quad R_f = (-\infty, 6]$

۶.

الف) $\frac{-b}{2a} = \frac{6}{2} = 3$

$9 - 18 + 2 = -7$

$R_f = \sqrt{[-7,+\infty)} = [0,+\infty)$

ب) $\frac{-b}{2a} = \frac{-4}{-2} = 2$

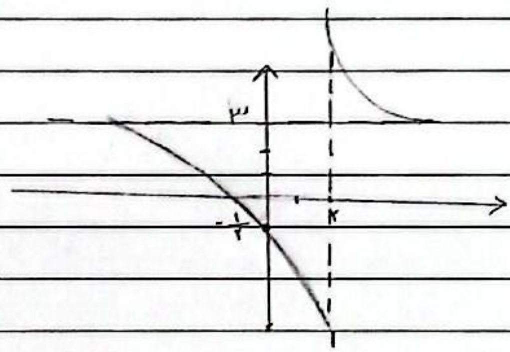
$-4 + 8 + 10 = 14$

$R_f = \sqrt{(-\infty, 14]} = [0, \sqrt{14}]$

۷. الف) $R_f = R$ ب) $R_f = [0,+\infty)$

۸. الف) $R - \{3\}$ ب) $R_f = \sqrt{R - \{4\}} = [0,+\infty) - \{2\}$

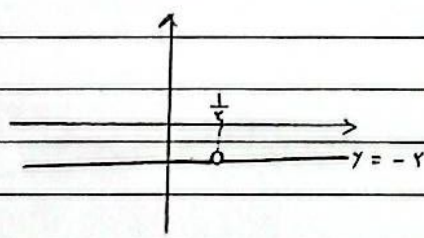
۹. الف)



$x = 0$

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

ب)



$y = \frac{2(2x-1)}{1-2x} = -2$

$x \neq \frac{1}{2}$

۱۰. الف) $R_f = [2,+\infty)$

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