

$$u = \frac{ry \mp \sqrt{4y^2 + 4y}}{2y}$$

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$$y(x) = x(x^2 - 2x + 3)$$

$$x = \frac{y}{x^2 - 2x + 3}$$

$$R_f = \mathbb{R} \checkmark$$

$$y(x^2 - 2x + 3) = 1 \quad x(xy - 2y) = 1 \quad R_f = \mathbb{R} - \{0\}$$

$$yx^2 - 2yx - 1 = 0 \quad x = \frac{1}{xy - 2y}$$

$$\Delta = 4y^2 + 4y \geq 0, y \neq 0$$

$$4y(y+1) \geq 0 \quad \frac{-1}{+1-1+}$$

(2)

الف) $x_{\min} = \frac{4}{1} = 4$
 $y_{\min} = 4 - 1 + 0 = 3$
 $R_f = [4, +\infty) \checkmark$

ب) $x_{\max} = \frac{-4}{-1} = 4$
 $y_{\max} = -9 + 18 + 3 = 12$
 $R_f = (-\infty, 12] \checkmark$

ج) $x_{\min} = \frac{4}{1} = 4$
 $y_{\min} = 4 - 1 - 3 = -7$
 $R_f = [0, +\infty) \checkmark$

د) $x_{\max} = \frac{-4}{-1} = 4$
 $y_{\max} = 18 - 9 = 9$
 $R_f = [0, 3] \checkmark$

الف) $R_f = \mathbb{R} \checkmark$

ب) $R_f = \mathbb{R} \checkmark$

ج) $R_f = [0, +\infty) \checkmark$

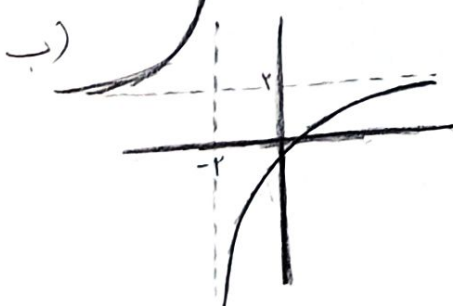
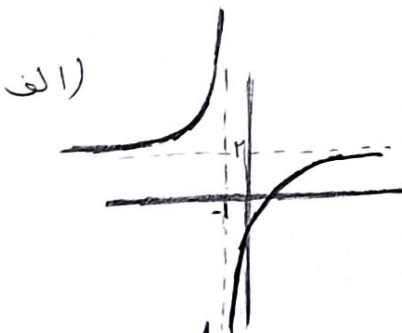
د) $R_f = [0, +\infty) \checkmark$

الف) $R_f = \mathbb{R} - \{3\} \checkmark$

ب) $R_f = \mathbb{R} - \{2\} \checkmark$

الف) $R_f = [0, +\infty) - \{\sqrt{2}\} \checkmark$

ب) $R_f = [0, +\infty) \checkmark$



الان غده سوال کامل دارم بهت ولی
 واسه بنابر کامل بایه روش بدی که آردنک مخانبها
 روبنویس

(2)

الف) $R_f = (-\infty, -2] \cup [2, +\infty)$ ✓

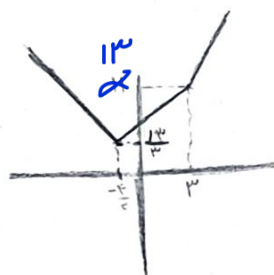
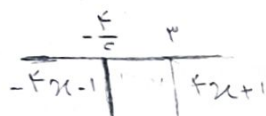
ب) $y = x^c + \frac{1}{x^c}$ $R_f = (-\infty, -2] \cup [2, +\infty)$ ✓

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

د) $R_f = [2, +\infty)$ ✓

الف) $\frac{1}{e} \leq x^2 + 3 + \frac{1}{x^2 + c}$ $R_f = [\frac{1}{e}, +\infty)$ ✓
 $\frac{1}{3} \leq x^2 + \frac{1}{x^2 + 3}$

ب) $\frac{x^2 + 4 + 1}{\sqrt{x^2 + 4}} = \sqrt{x^2 + 4} + \frac{1}{\sqrt{x^2 + 4}}$ $R_f = [\frac{5}{4}, +\infty)$ ✓



الف) $\frac{-1}{-x-1} \leq \frac{r}{4cx}$ $R_f = [c, +\infty)$ ✓

ب) $\frac{-1}{-x-1} \leq \frac{1}{x-3}$ $R_f = [-2, +\infty)$ ✓

(1, 7.5) -9

(2) -10