

$$x = x^y - 5 \rightarrow x^y = x + 5 \rightarrow x = \pm \sqrt{x+5} \quad R_f = [-5, +\infty)$$

(C.1)

(1)

✓

$$x = x^y + 1 \rightarrow x^y = x - 1 \rightarrow x = \sqrt[y]{x-1} \quad R_f = \mathbb{R}$$

(C.)

$$x = x^y - 4x + 5 \rightarrow x = x^y - 4x + 5 + y$$

(C.2)

(2)

✓

$$x = (x-y)^y + y \rightarrow (x-y)^y = x-y$$

$$x = \pm \sqrt[y]{x-y} + y \quad R_f = [y, +\infty)$$

$$x = x^y - 5x + 1 \rightarrow x = (x - \frac{5}{y})^y - \frac{y}{y}$$

(C.)

$$(x - \frac{5}{y})^y = x + \frac{y}{y} \rightarrow x = \pm \sqrt[y]{x + \frac{y}{y}} + \frac{5}{y} \quad R_f = [-\frac{y}{y}, +\infty)$$

$$x x^y - yx = x^y + y \rightarrow x x^y - x^y = y + yx$$

(C.3)

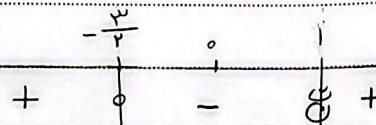
(3)

✓

$$x^y(x-1) = y + yx$$

$$x^y = \frac{y + yx}{x-1} \rightarrow x = \pm \sqrt[y]{\frac{y + yx}{x-1}}$$

$$R_f = (1, +\infty) \cup (-\infty, -\frac{y}{y})$$



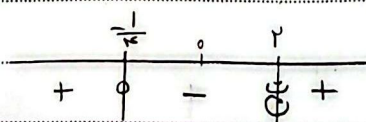
$$x|x| - yx = y|x| + 1 \rightarrow x|x| - y|x| = yx + 1$$

(C.)

$$|x|(x-y) = yx + 1$$

$$|x| = \frac{yx + 1}{x-y}$$

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



$$R_f = R$$

(الف) (7) چون $\cos$ و $\sin$ خود است. پس

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

(ب)

$$R_f = R - \{3\}$$

(الف) (1)

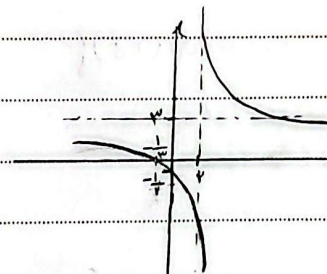
$$\sqrt{\frac{4}{3}} = (2)$$

$$R_f = R - \{2\}$$

(ب)

$$x = \frac{2x+1}{x-2}$$

$$\begin{cases} \text{مجاوب قائم} = x=2 \\ \text{مجاوب افق} = x = \frac{2}{2} = 1 \end{cases}$$



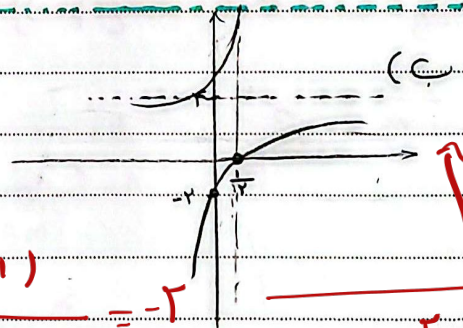
(الف) (9)

$$x \rightarrow \infty \Rightarrow x=0 \rightarrow \frac{1}{3}$$

$$x \rightarrow -\infty \Rightarrow x=0 \rightarrow \frac{1}{3}$$

$$x = \frac{15x-2}{1-2x}$$

$$\begin{cases} \text{مجاوب قائم} = x = \frac{1}{2} \\ \text{مجاوب افق} = x = \frac{2}{2} = 1 \end{cases}$$



(ب)

$$x \rightarrow \infty \Rightarrow x=0 \rightarrow \frac{1}{2}$$

$$x \rightarrow -\infty \Rightarrow x=0 \rightarrow \frac{1}{2}$$

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

$$1-2x \neq 0 \rightarrow x \neq \frac{1}{2}$$

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

(الف) (10) چون $\cos$ و $\sin$ خود است. پس

(ب) 1, 100

$$\sqrt[3]{\frac{x^2+1}{x}} = \sqrt[3]{x+\frac{1}{x}}$$

$$x > 0 \rightarrow R_f = (-\infty, -1] \cup [1, +\infty)$$

(ب)

$$x > 0 \rightarrow (\sqrt[3]{2}, +\infty)$$

$$x < 0 \rightarrow (-\infty, \sqrt[3]{-2})$$