

1-

$$\text{الف) } y^x - x = (x^x) \quad \checkmark \text{ صحیح}$$

$$y_1^x = (x^x - x) \int y_1^x \rightarrow y_1 = y_1 \quad \checkmark \text{ صحیح}$$

$$y_1^x = (x^x - x) \int$$

$$\text{ب) } |1| + x^1 = x + x^x$$

$$\text{ج) } x = 0 \rightarrow |y| = x - 2y + x^x \quad \times \text{ غلط}$$

$$\text{د) } \sqrt{x-2} + |y-1| = 0 \quad \text{صحیح و غلط هر دو صحیح}$$

$$x = \frac{1}{2} \quad y = \frac{1}{2} \quad \left\{ \frac{1}{2} \right\} \quad \checkmark \text{ صحیح}$$

$$\text{ه) } x = \cos y \quad (9, 17)$$

$$\text{و) } x = 0 \rightarrow y = \frac{\pi}{2}, \frac{3\pi}{2} \quad \times \text{ غلط}$$

$$\text{ز) } \frac{x+2}{x^2-2x} \quad x^2 = 2x \rightarrow x(x-2) \neq 0$$

$$x^2 - 2x \quad x \neq 0, 2 \quad D = R - \{0, 2\}$$

$$\text{ح) } \frac{x+2}{x^2 \cdot \sqrt{x+1}} \quad D = R^+ - \{0\} \rightarrow \{x+1\} \rightarrow \text{بسته بندی}$$

$$D = R \quad \text{بسته بندی نیست} \quad D = R$$

$$\text{ط) } \frac{x+2}{x^2} \quad x^2 = 2x \rightarrow x^2(x-2) \neq 0$$

$$D = R - \{0, 2, -1\} \quad x \neq 0, 2, -1$$

$$f(x) = \sqrt{x-1} + \sqrt{x-1} \quad x \geq 1 \quad x \geq 1 \quad x \geq 1$$

$$D = [1, \infty)$$

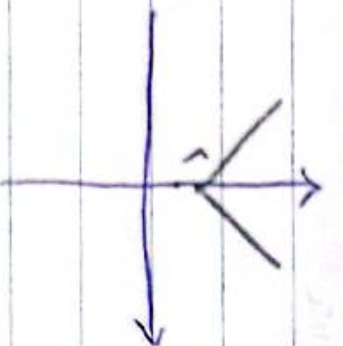
$$f(x) = \frac{x^2-1}{x^2+1} \quad x \neq -1$$

$$D = \mathbb{R}$$

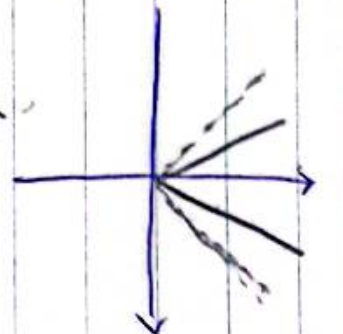
$$f(x) = \sqrt{x-1} \quad x \geq 1 \quad D = [1, \infty) - \{1\}$$

$$f(x) = \frac{x^2+1}{x^2+1} \quad x \neq 0 \quad D = \mathbb{R} - \{0\}$$

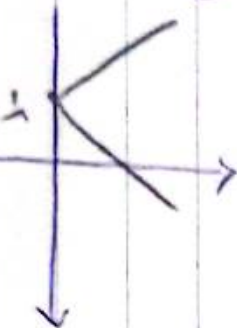
الف



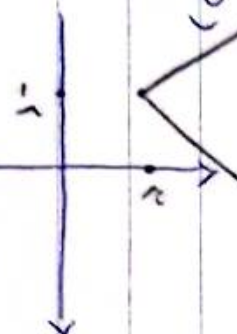
ب



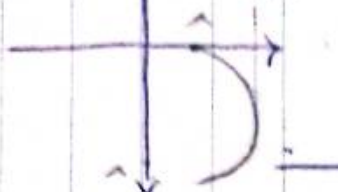
2.1



2.2



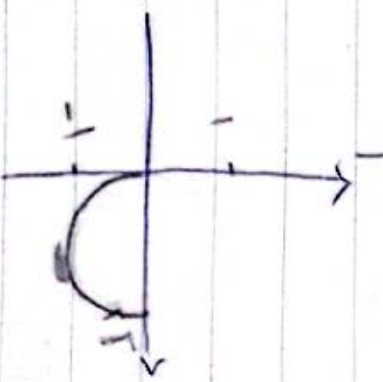
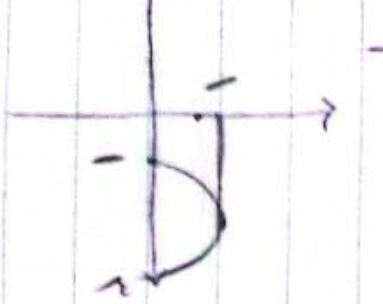
الف



ب



2



$$f(x) = (x-2)(x-3)(x-4) \quad \begin{array}{c|c|c|c} & 2 & 3 & 4 \\ \hline & - & + & - \\ \hline & 0 & 0 & 0 \end{array} \quad -4$$

$$[2, 3] \cup [4, \infty)$$

$$-1 \quad \begin{array}{c|c|c|c} & 2 & 3 & 4 \\ \hline & + & - & - \\ \hline & 0 & 0 & 0 \end{array} \quad (-\infty, 2] \cup [4, \infty) + \{3\}$$

$$\text{الف) } \begin{array}{c|c|c|c} & 2 & 3 & 4 \\ \hline & - & + & - \\ \hline & 0 & 0 & 0 \end{array} \quad [2, 3) \cup [4, \infty) \quad -v$$

$$-1 \quad \begin{array}{c|c|c|c} & 2 & 3 & 4 \\ \hline & + & - & - \\ \hline & 0 & 0 & 0 \end{array} \quad (-\infty, 2] \cup [4, \infty)$$

$$\text{الف) } \frac{x^2 - 2x + 2}{x - 2} \quad \frac{x^2 - 5x + 2}{x^2 - x} \quad \frac{x-1}{x^2 + x - 2} \quad -1$$

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

$$\begin{array}{c|c|c|c|c} & -2 & 1 & 2 & \\ \hline & + & - & - & + \\ \hline & 0 & 0 & 0 & 0 \end{array}$$

$$\frac{(x-1)(x-2)}{(x-1)(x-2)} = \frac{(x-1)(x-2)}{(x-1)(x-2)} \quad (+\infty, 2] \cup (3, \infty) - \{1\}$$

$$\text{الف) } \frac{x^2 - 2x + 2}{x^2 + x + 2} \quad \frac{x^2(x-1)(x+1)}{x^2 + x + 2} \quad \begin{array}{c|c|c|c} & -1 & 0 & 1 \\ \hline & + & - & - \\ \hline & 0 & 0 & 0 \end{array} \quad -9$$

$$\Delta, b^2 - 4ac, 1 - 1 = 0 \quad \text{ب) } \frac{x^2(x-1)(x+1)}{x^2 + x + 2}$$

$$(-\infty, -1] \cup [1, \infty) + \{0\}$$

$$\frac{1}{x}$$

$$R = (-1, 1)$$

$$y' = \frac{x^2 + 2x + 1}{x^2 + 2x + 1} = 1$$

ریشه یکنوا

D_y

$$\Delta y' = \Delta y$$

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$$a - 12 \pm 5 \text{ (منفی)} \quad 2 - 12 \pm 5$$

$$\int \frac{x^2 - 1}{x^2 - x} dy \quad (x-1)(x^2 + x + 1) \quad \frac{1}{x(x-1)(x+1)}$$

$$R = [-1, 0] - \{1\} \cup (-\infty, -1) \cup (0, 1) \cup (1, \infty)$$

$$\int \frac{x^2 - 1}{x^2 - x} dx = \frac{(x-1)(x+1)}{(x-1)(x+1)}$$

$$R = (-\infty, 1] - \{1\}$$