

$$y^3 - 1 \geq 0 \rightarrow y^3 - 1 \geq 0 \rightarrow y \geq 1 \rightarrow (-1, +\infty)$$

$$-y^3 \geq 1 \rightarrow -y^3 \geq 1 \rightarrow y \leq -1 \rightarrow (-\infty, -1)$$

حاصل است

(1)

$$\frac{x(x-2)}{f(x)} \geq 0 \rightarrow \frac{-\infty \quad -2 \quad 0 \quad 2 \quad +\infty}{+\quad - \quad + \quad - \quad +}$$

$$D = (-\infty, -2) \cup [-2, 2] \cup [2, +\infty)$$

(2)

$$\text{الف)} \frac{x^2 - 2x + 2}{x^2 - 4x} \geq 0 \rightarrow \Delta \leq 0$$

$$\frac{-2 \quad 0 \quad 2}{-\quad + \quad - \quad +}$$

$$D = (-2, 0) \cup (2, +\infty)$$

$$\text{ب)} \frac{x^2 - 2x + 2}{x^2 - 4x}$$

$$x^2 - 4x \neq 0 \rightarrow x(x-4) \rightarrow D = \mathbb{R} - \{0, 4\}$$

(3)

$$\text{ج)} \frac{x-2}{x^2 - 2x - 1} \geq 0$$

$$\frac{-2 \quad 1 \quad +\infty}{-\quad + \quad +}$$

$$D = (-2, +\infty) - \{1\}$$

$$\text{د)} \frac{x-2}{x^2 - 2x - 1} \neq 0 \rightarrow x \neq 2$$

$$\rightarrow \frac{x-2}{x^2 - 2x - 1} \geq 0 \rightarrow x \geq 2$$

$$D = \mathbb{R} - \{-2, -1\}$$

(4)

$$\text{ه)} \frac{x(x^2-1)}{x^2-1} \geq 0 \rightarrow \frac{-1 \quad 0 \quad 1}{- \quad + \quad -}$$

$$|x| + x > 0 \rightarrow \mathbb{R}^+$$

$$A \rightarrow D = [1, +\infty)$$

$$\left\{ \begin{array}{l} |x-2| - x^2 \geq 0 \rightarrow |x-2| \geq x^2 \rightarrow |x-2| \geq 0 \\ |x|-1 \neq 0 \rightarrow x \neq \pm 1 \end{array} \right.$$

$$A \Rightarrow D = \mathbb{R} - \{\pm 1\}$$

(5)

$$3) (x-1)(x-1) \geq 0$$

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$$\cup \{x-1\} = 0$$

$$\rightarrow 0.5x - 2.5$$

$$\rightarrow 1.5x + 2.5$$

$$\frac{r}{+b} \cdot \frac{r}{+}$$

$$D = \mathbb{R}$$

$$4) |x-1| \{x-1\} \geq 0$$

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مشتق

$$\hookrightarrow \{x-1\} \geq 0 \rightarrow x-1 \geq 0 \rightarrow x \geq 1$$

$$D = \{x \geq 1\} \cup \{1\}$$

$$| |n-1| - 1 | - k \neq 0 \rightarrow | |n-1| - 1 | = k \rightarrow |n-1| = 1-k$$

$$\begin{cases} n = 1-k+r \\ n = k-1+r \end{cases}$$

$$\begin{cases} |n-1| = 1+k \\ n = 1+k+r \\ n = -k-1+r \end{cases}$$

$$1) -k+r$$

$$2) k+1 \Rightarrow -k+r \neq k+1$$

$$3) k+r$$

$$r \neq 2k \\ k \neq 1$$

$$-k+r \neq k+1 \\ k \neq 0$$

$$\Rightarrow k = 2 - \{0, 1\}$$

✓

$$\frac{x^2 + 5x + 2}{x^2 + 5x + 2}$$

$$\rightarrow (x+1)(x+2) \neq 0 \rightarrow x \neq -1, -2$$

$$\frac{x+1}{x-1} \rightarrow x \neq \pm 1$$

$$x \neq \{ \pm 1, -2 \} \quad n=2 \quad \frac{x^2 - 4x + 1}{x^2 - 4x + 1} = 0 \rightarrow (x-2)^2 = 0 \rightarrow x=2$$

$$y = \log_{n+1} \log_{\frac{1}{n}} \rightarrow \begin{cases} n > 1 \\ n \neq 1 \end{cases}$$

$$n+1 > 1 \rightarrow n > 0$$

$$n+1 \neq 1 \rightarrow n \neq 0$$

$$\Rightarrow D = (\mathbb{R} \setminus \{0\}) - \{1\}$$

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$$- \log x \log 2 \rightarrow \log x \log 9 \rightarrow \log x \log 27 \rightarrow \log x \log 81$$

$$D = \{1, 2, 3\}$$

1.