

۱۸، ۱۷۵

نام و نام خانوادگی فرهاد فرزنده پاسخنامه تشریحی تکلیف شماره ۳ کلاس (ازهم) B

الف) $y = \frac{x+3}{2x^2+3x-1}$ $\xrightarrow{2x^2+3x-1=0}$ $\Rightarrow x_1 = -1, x_2 = \frac{1}{2}$ $\Rightarrow h = 0 \Rightarrow h = (x-1)(2x^2+3x-1)$
 $\rightarrow (x-1)(x+3)(2x-1) \rightarrow h \neq 0 \Rightarrow x \neq 1, -3, \frac{1}{2}$ ✓ (۲)

ب) $y = \frac{x+3}{2x^2+9x+1}$ $\xrightarrow{2x^2+9x+1=0}$ $\Rightarrow x_1 = -4, x_2 = -\frac{1}{2}$ $\Rightarrow h = 0 \Rightarrow h = (x+1)(2x^2+9x+1)$
 $\rightarrow (x+1)(2x^2+9x+1) \rightarrow (x+1)(x+3)(2x+1) \Rightarrow h \neq 0 \Rightarrow x \neq -1, -3, -\frac{1}{2}$ ✓

الف) $y = \frac{x+3}{x^2-2x^2+2x-1}$ $\xrightarrow{1+2-2-1=0}$ $\rightarrow x_1 = 1 \Rightarrow h = 0$
 $\Rightarrow (x-1)(x^2-x+1) = h$ $\xrightarrow{\Delta = 0}$ $\Rightarrow$ ریشه ندارد $\Rightarrow x \neq 1$ ✓ (۲)

ب) $y = \frac{x+3}{x^2-2x^2+2x-1}$ $\rightarrow \frac{-3}{x^2-2x^2+2x-1}$ $\rightarrow \frac{-3}{(x-1)(x^2-x+1)}$ $\rightarrow (-\infty, -3] \cup (1, +\infty)$ ✓

$y = \frac{x}{x^2-5x+6}$ $\xrightarrow{x^2-5x+6=0}$ $\Rightarrow x_1 = 2, x_2 = 3$ $\Rightarrow h = 0 \Rightarrow x \neq 2, 3$ ✓ (۲)

$x \leq 1 \Rightarrow x^2+5x-6-2x+6 \Rightarrow x^2+3x = y \Rightarrow x(x+3) = y$
 $\Rightarrow y \neq 0 \Rightarrow x \neq 0, -3$ ✓
 $D_F = \mathbb{R} - \{0, -3, 2, 3\}$ ✓

$y = \frac{x+3}{|2x+1|-|x+3|}$ $\rightarrow |2x+1|-|x+3| \neq 0 \rightarrow |2x+1| \neq |x+3|$
 $\Rightarrow 4x^2+4x+1 \neq x^2+6x+9 \Rightarrow 3x^2-2x-8 \neq 0$
 $\Rightarrow (x-4)(x+2) \neq 0 \Rightarrow x \neq 4, -2$ ✓ (۱)

$y = \sqrt{|2x+1|-|x+3|}$ $\Rightarrow |2x+1|-|x+3| \geq 0 \Rightarrow |2x+1| \geq |x+3|$
 $\Rightarrow 4x^2+4x+1 \geq x^2+6x+9 \Rightarrow 3x^2-2x-8 \geq 0 \Rightarrow (x-4)(x+2) \geq 0$
 $\Rightarrow x \in (-\infty, -2] \cup [4, +\infty)$ ✓

$y = \log_2(1-\log_2^x)$ $\xrightarrow{1) x > 0}$ $\Rightarrow 2) 1-\log_2^x > 0 \rightarrow \log_2^x < 1 \Rightarrow x < 2$ ✓ (۲)

$y = \log_2(1-\log_2^{\frac{x}{2}})$ $\xrightarrow{1) x > 0}$ $\Rightarrow 2) 1-\log_2^{\frac{x}{2}} > 0 \rightarrow 1 > \log_2^{\frac{x}{2}} \rightarrow x > \frac{1}{2}$
 $\xrightarrow{1) 2} D_F = (\frac{1}{2}, +\infty)$ ✓

$$f(x) = \sqrt{\log_{\log_{10}}^{r_{n-1}}} \Rightarrow \begin{array}{l} 1) r_{n-1} > 0 \rightarrow x > \frac{1}{5} \checkmark \\ 2) \log_{\log_{10}}^{r_{n-1}} > 0 \rightarrow r_{n-1} > 1 \rightarrow x > 1 \checkmark \\ 3) \log_{\log_{10}}^{r_{n-1}} \geq 0 \rightarrow \log_{\log_{10}}^{r_{n-1}} \leq 1 \rightarrow r_{n-1} \leq 10 \\ \rightarrow x \leq 4 \Rightarrow x \leq 3 \checkmark \end{array}$$

$$D = \langle 1, 3 \rangle$$

$$y_2 \log(r \cos \theta + 1) \Rightarrow r \cos \theta + 1 > 0 \rightarrow \cos \theta > -\frac{1}{r}$$

$$\rightarrow D_F z \left(rKM - \frac{KM}{r}, rKM + \frac{KM}{r} \right) \checkmark$$

$$y_2 \sqrt{\log \frac{a-1}{a+1}} \Rightarrow 1) \frac{a-1}{a+1} > 0 \Rightarrow \frac{-1}{+} \frac{+}{-} \frac{+}{+}$$

$$\rightarrow \frac{-r}{a+1} \geq 0 \Rightarrow \frac{-1}{+} \frac{+}{-} \frac{+}{+} \xrightarrow{1/2} (-\infty, -1) \checkmark$$

$$\begin{aligned} f(x) &= \sqrt{(a+r)x^2 + ax + b} \rightarrow D_f = (-\infty, r) \rightarrow a+r \geq 0 \Rightarrow a \geq -r \\ &\rightarrow -rx + b \geq 0 \rightarrow \frac{b}{r} \geq x \rightarrow D_f = (-\infty, \frac{b}{r}) \\ &\rightarrow \frac{b}{r} \geq r \Rightarrow b \geq r^2 \quad \checkmark \end{aligned}$$

$$f(u) = \sqrt{u^r + ru + r - m^r} \xrightarrow{D_F \approx R} u^r + ru + r - m^r \rightarrow \Delta \ll 0$$

$$\rightarrow f - f(r - m^r) \ll 0 \Rightarrow f - 1 + fm^r \ll 0 \Rightarrow fm^r \ll f$$

$$\rightarrow m^r \ll 1 \rightarrow -1 \ll m \ll 1 \rightarrow m_{\max} - m_{\min} = 1 - (-1) = 2 \quad \checkmark$$

$$f(n) = \frac{\sqrt{f-n^2}}{[n] + [-n] + 1} \rightarrow \begin{array}{l} 1) f-n^2 \geq 0 \Rightarrow -n \leq n \leq n \\ 2) [n] + [-n] + 1 \neq 0 \end{array}$$

$$n \in \mathbb{Z} \Rightarrow [n] - [-n] + 1 = 1 \checkmark$$

$$n \notin \mathbb{Z} \Rightarrow [n] - [-n] - 1 + 1 = 0 \times$$

$$\} \Rightarrow n \in \mathbb{Z}$$

$$\text{III. } \xrightarrow{I \cap II} n \in \{-2, -1, 0, 1, 2\} \rightarrow D_F = \{-2, -1, 0, 1, 2\}$$