

۱۹۵۰

نام و نام خانوادگی: ... پاسخنامه تشریحی تکلیف شماره ۵ ... کلاس: ...	۱. $f(x) = \sqrt{x+4}\sqrt{x-4} + \sqrt{x-4}\sqrt{x-4} = A \Rightarrow A^2 = x+4\sqrt{x-4} + x-4\sqrt{x-4} + 2\sqrt{x-4}\sqrt{x-4}$ $2x + 2\sqrt{x^2 - 16x + 16} = A^2 \Rightarrow 2x + 2 x-4 = A^2 \xrightarrow{x \geq 4} 2x + 2x - 16 = A^2$ $A^2 = 4x - 16 \Rightarrow A = 2\sqrt{x-4}$ $\frac{0+2}{-4} = \frac{-1}{2}$ $a=0, b=2, c=-4$
۲. $g(x) = \{(2,1)(0,4)\}$ $f(x) = \{(2, \frac{4}{-1})(0, \frac{2}{2})\}$ $\frac{g}{f} = \{(2, \frac{-1}{4})(0, 4)\}$	۳. $f(2x) = \{(1, 2)(\frac{2}{2}, -1)(2, 2)(-\frac{1}{2}, 4)\}$ $f(x^2) = \{(1, 2)(\sqrt{2}, -1)(2, 2)(-2, 2)\}$ $2g(x) = \{(-2, 1)(1, 2)(2, 1)(1, 1)\}$ $\frac{2f}{g} = \{(1, -4)(2, 1)\}$
۴. $g = \{(0,1)(2,4)(-2,4)(-1,2)(2,2)\}$ $f(x) = \{(1,1)(2,1)(4,1)(-2,0)\}$ $2f(x) = \{(2,2)(4,2)(8,2)(-4,0)\}$ $2f+g = \{(2,5)(4,6)(8,6)(-4,0)\}$	۵. $\frac{\sqrt{2x} - x}{x-2} = \frac{1}{x+1}$ $\sqrt{2x} - x \geq 0 \rightarrow \sqrt{2x} \geq x$ $x^2 - 2x \leq 0 \rightarrow 0 \leq x \leq 2$ $D_f = \{k k \in \mathbb{Z}, k \neq 2\}$ $D_f = \{0, 1, 3\}$

$h(n) = \left\{ (1, 0), \left(1, \sqrt{\frac{1}{y}}\right), \left(\frac{1}{y}, 0\right) \right\}$	6
$y = n^2 - 4n + 3 \rightarrow R_f = \mathbb{R}^0$ $R_f = (-\infty, 1) \cup (0, \infty) \left \frac{1-y}{4} \right \leq \frac{1}{y} + 1 > 0 \leftarrow n = 1 \pm \sqrt{\frac{1}{y} + 1}$ $y = \frac{1}{n^2 - 4n} \Rightarrow y = \frac{1}{(n-1)^2 - 1} \Rightarrow (n-1)^2 - 1 = \frac{1}{y} \Rightarrow (n-1)^2 = \frac{1}{y} + 1$	7
1) $y = n^2 - 4n + 1$ $\text{ext} \left \frac{1-y}{4} \right \frac{1}{4} \leq 0 \quad R_f = [4, +\infty)$ 2) $y = -n^2 + 4n + 5$ $\text{ext} \left \frac{-y}{4} \right \frac{1}{4} \leq 0 \quad R_f = (-\infty, 12]$ 3) $y = \sqrt{n^2 - 4n - 1}$ $\text{ext} \left \frac{y}{4} \right \frac{1}{4} \leq 0 \quad R_f = [0, +\infty)$ 4) $y = \sqrt{4n - n^2}$ $\text{ext} \left \frac{-y}{4} \right \frac{1}{4} \leq 0 \quad R_f = [0, 4]$	8
1) $y = n^2 - 4n + 1$ $R_f = \mathbb{R}$ 2) $y = n^2 - 4n + 3$ $R_f = \mathbb{R}$ 3) $y = \sqrt{n^2 - 4n + 3}$ $R_f = [0, +\infty)$ 4) $y = (n^2 - 4n + 3)^2$ $R_f = [0, +\infty)$	9
1) $y = \frac{n+1}{n-2}$ $\rightarrow \text{ext} \left \frac{y-1}{2} \right \frac{1}{2} \leq 0 \Rightarrow y-1 \geq -2y-1$ $\Rightarrow n(n-2) = -2y-1 \Rightarrow n = \frac{2y+1}{y-2} \quad R_f = \mathbb{R} - \{2\}$ 2) $y = \frac{n+1}{n+1}$ $\rightarrow R = \left\{ \frac{1}{2} \right\} \quad R_f = \mathbb{R} - \left\{ \frac{1}{2} \right\}$	10

$$f(n) = \frac{\sqrt{r^2 n} - n}{n - r} \rightarrow \begin{cases} n \neq r \\ n \geq 0 \end{cases} \quad (\sqrt{r^2 n}) \rightarrow Df = [0, r] - \{r\} \quad (\infty)$$

$$\begin{cases} \sqrt{r^2 n} - n \geq 0 \rightarrow r^2 n \geq n^2 \rightarrow 0 \leq n \leq r \end{cases}$$

$$g(n) + 1 \neq 0 \rightarrow g(n) \neq -1 \rightarrow [n] + [-n] \neq -1 \rightarrow n \in \mathbb{Z}$$

$$D \frac{f}{g+1} = \left\{ Df \cap Dg, g(n) \neq -1 \right\} = \{0, 1, r\}$$

$[0, r] - \{r\} \cap \mathbb{Z}$